PAPER TRADE JOURNAL
Title Reg. U. S. Pat. Off.

Vol. 112, No. 14 Thursday, April 3, 1941 Price Ten Cents

# Adequacy of Pulp Assured for This Year

## Bureau of Foreign and Domestic Commerce Reports Production In United States and Canada Will Meet Home and Export Requirements — Margin of Safety Small In Unbleached Sulphite.

WASHINGTON, March 31, 1941—Domestic capacity, with the assistance of imports from Canada will meet both home and export demands for wood pulp in the United States this year despite the almost complete disappearance of imports from Scandinavian sources, the Bureau of Foreign and Domestic Commerce made known today.

If any further large increase in the demand for unbleached sulphite pulp should develop, however, it would pare the margin of safety and most likely would precipitate a situation close to actual scarcity by the end of 1941, the bureau's report indicates.

### Pulp Output Up 50%

Both Canadian and United States sources have responded effectively to the demand of paper mills for pulp to relpace the supplies formerly imported from Europe. For example, between August, 1939, and August, 1940, the output of unbleached and bleached sulphite pulp in the United States advanced 51 and 49% , respectively, and bleached and unbleached sulphate production similarly rose 26 and 36%.

### Exports for 1940 Set Record

Exports of wood pulp from the country last year established a high record, at approximately 481,000 tons, or 245% higher than in 1939, and 49% more than the 1937 peak year. The United Kingdom, with its Scandinavian imports cut off, was the largest individual purchaser. Exports of unbleached sulphate were the largest in volume, followed by rayon pulp. Exports to Japan registered a sharp increase over 1939, but were much smaller than in 1937. The Latin-American countries took larger supplies.

The report notes that a suggestion has been made in some quarters of the industry that exports of wood pulp be placed under embargo to avoid a tight domestic situation. Analysis of American export trade, however, discloses that, with the exception of shipments of rayon pulp to Japan, in which grade there is no apparent scarcity, pulp from the United States goes principally to the United Kingdom and Latin America.

Our exports of paper, paperboard and paper products last year, also set a new record, the total being 109% above the previous high record of 1939.

### Ban on Canadian Pulp Unlikely

A press report from Toronto, Canada, on March 31, states that Premier Mitchell Hepburn of Ontario assured a delegation of independent pulpwood exporters and their United States customers that there was little likelihood at present that pulpwood exports would be cut off.

The delegation had sought the conference because of concern over reports that such action might be contemplated. Representatives of American mills told the Premier they did not question any action by the provincial government in this respect, but they asked for consideration to enable them to arrange for supplies from another source in event Canadian supplies are stopped.

Mr. Hepburn said if it ever became necessary to change the present policy, notification well ahead of any action would be forthcoming.

Members of the delegation included Perry Wilson, Rothschilds, Wis.; M. F. Becker and R. Caldwell, Rhinelander, Wis.; Vince Martin, Munising, Mich.; A. L. Johnston, H. S. Mosher, Malcolm Cochrane, Thomas Falls and Charles Gardner, Port Arthur, Ont., and H. Telfer, Detroit.

## Gaylord Container in New Offices

ST. LOUIS, Mo., March 31, 1941—The general and executive offices of the Gaylord Container Corporation were opened on the second floor of the Cotton Belt Building March 25. The move is part of the company's plan to convert the office space formerly at 2820 South Eleventh street, into an area for manufacturing purposes.

The new quarters in the Cotton Belt Building contain approximately 23,000 square feet of floor space which has been entirely modernized and air-conditioned.

# Paper Mill Sludge Finding a Ready Market

## Curtailment of Use of Metals Needed For Defense Industries Stimulates Demand For Lignin Waste For Plastic Products—More Funds Sought For Forest Products Laboratory — Other News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., March 31, 1941—Sludge from Wisconsin paper mills is finding a market of growing proportions since curtailment has been enforced on the use of metals essential to defense industries. Plants making plastics are demanding large quantities of the lignin waste from the mills, as well as groundwood for the base for their products.

The Eclipse Moulded Products Company, 5136 N. Thirty-Second St., Milwaukee, Wis., is one of the largest operators in this field, and is utilizing waste products almost entirely to make washing machine agitators, refrigerator trays, metal window shades and other products formerly produced from aluminum. Eugene G. Engman, president of the company, says automobile bodies eventually will be made from plastics.

Wood flour, resin and phenol acids, ordinarily waste products, are the principal ingredients used for plastic production. By means of molds, hydraulic pressure rams and terrific heat supplied by steam, many products for commercial use are being produced in increasing quantities, of a strength and durability equal to their metal predecessors. The lignite is obtained largely from waste piles of Fox River Valley paper mills and sawmills. It is even possible to produce stringlike fiber drawn down finer and stronger than catgut. The demand is expected to grow as the problem of adequate supplies of metal for armaments increases.

### Seeks More Funds for Laboratory

Senator Alexander Wiley of Wisconsin, is waging a fight in Congress to obtain an appropriation of $1,500,000 annually for the United States Forest Products Laboratory at Madison, Wis. The House has passed the argriculture department appropriation bill for the 1942 fiscal year with only $632,000 allotted, the same as received during the current fiscal year.

It was pointed out by the senator that the Sweeney-McNary forest research Act passed in 1928 authorized an annual appropriation of $1,000,000 for ten years, but that $665,000 was the top figure actually made available for research in forest products.

An extra role will be played by the laboratory in the field of national defense, Senator Wiley told the senate committe eon appropriations. "Much needs to be done in research to make veneers and plywood serve aircraft production, in molding and lamination of aircraft parts for mass production and in many other similar fields," he said.

### Water Power Ample in Wisconsin

With spring thaws in progress, water power is more than abundant for Wisconsin paper mills. The thaw has been gradual and the nights cold, eliminating much of the trouble occasioned at this time of the year with damage and obstruction at the dams from large fields of floating ice.

The Big Eau Pleine reservoir feeding the Wisconsin River is being allowed to drop several inches a day in level, anticipating heavy flow from the spring runoff and rains. M. W. Kyler, assistant manager of the Wisconsin Valley Improvement Company, reports that the gauge at the reservoir shows seven more available feet of water to fill it to the top level.

Preparations are being made to open navigation on the Fox River so the movement of coal by barge to paper mills of the valley may be started. The Fox River Navigation Company at Kaukauna, Wis., operators of the barge line for the paper mills, has been reconditioning its barges and tugs preparatory to starting the season.

### Safety Meeting Largely Attended

Approximately 600 workers in paper mills, converting plants and other industries of Neenah and Menasha attended the closing session of a series of Twin City safety meetings at the high school auditorium at Menasha, Wis., Tuesday evening, March 25. The speaker was James E. Gheen, New York City humorist, who spoke on safety as related to national defense. "We need education to join everyone together in the interests of safety," he said. "Dare to live and enjoy life but not dangerously."

E. A. Page of the Kimberly-Clark Corporation, general chairman for the series of safety meetings, reviewed the year's work. Howard Aderhold of the Marathon Paper Mills Company, was chairman for the evening. Prior to the address, the Lakeview mill band of Kimberly-Clark played a concert.

E. B. Hoofer of Kimberly-Clark, was awarded the grand prize for the series, a trip to Chicago. Other awards went to: Harold Smith, Marathon Paper Mills Company; Vernon Johnson, Menasha Wooden Ware Corporation, and Harold Reichelt, Kimberly-Clark.

### Mill Visiting Privileges Limited

Generous visiting privileges at mills of the Kimberly-Clark Corporation, Neenah, Wis., have been limited, according to S. F. Shattuck, vice-president. Hereafter, the Lakeview mill at Neenah will permit visitors only on Mondays from 1 to 3 o'clock, and at the Kimberly Wis., mill on Tuesdays from 2 to 4 o'clock. This step became necessary, Mr. Shattuck said, because local mill supervisors find it increasingly difficult to spare people from their regular duties, and because of the more complex operating conditions in these times. Visitors hereafter will be required to obtain passes from the general offices at Neenah.

### M. M. & M. to Issue House Organ

The Minnesota Mining and Manufacturing Company, which operates a paper abrasives mill at Wausau, Wis., will soon begin publication of a new house organ for its 2,800 employees. Allen Wagner, former city editor of the St. Paul Daily News, will be the editor. The publication will go to employees in the plants in St. Paul, Minn., Copley, Ohio, Wausau, Wis., and Detroit, Mich, and to its various warehouses and branch offices throughout the country.

# Demand for Paper Active in Chicago Area

## Slight Improvement In Past Week Adds Additional Strength To Market In Many Paper Lines—Salesmen Make Golf Plans—Folding Box Executives Meet—Packaging Show Opens—Other News.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., March 31, 1941—Business in the Chicago area improved slightly the past week, with most of the lines consolidating recent gains and reporting current strength in the entire price range. There were no changes in list prices but all the slack seems to be about taken up, according to local reports. Krafts had an unusually good week as a reflection of market improvement in retail buying. Newsprints and groundwoods likewise found sentiment among the buyers much improved as demand widened out appreciably. Sulphites were firm to strong in all grades. Books and covers showed more buoyancy than for some time while the board market edged into higher ground all the way around. Waste papers, especially the higher grades, evidenced further strength with some revamping of the price situation reported in some quarters for after the first of the current month.

### Salesmen Make Golf Plans

The western division of the Salesmens Association of the Paper Industry, held its Monday, March 24, meeting as a round table discussion of general business affairs. Plans as to the utilization of outside speakers to develop further interests were continued. Meanwhile, the Sapeyes heard from Edward Rolain, Mosinee Paper Mills, and chairman of the 1941 golf committee, that plans were going ahead for a big sports season with the first tournament to be held the latter part of May. He will be assisted by Raymond George of the Tomahawk Kraft Paper Company.

### Folding Box Executives Meet

Folding box manufacturers, whether or not they are members of the Folding Paper Box Association, were invited this week to attend the associations annual meeting held at the Blackstone Hotel on March 27 and 28. The very unusual problems confronting the industry, including new uses for folding boxes in army requirements, drew a record crowd. The only outside speaker was Clifton Utley, noted radio commentator, who analyzed the present world situation for the folding box manufacturers. One of the feature items on the program was the appearance of Clark Everest, president of the Marathon Paper Mills and a senior deputy of the National Defense Advisory Commission. Mr. Everest analyzed the demands that would be made on the folding paper box industry and pointed out that the quartermaster corps of the army had recently ruled that corrugated and solid fibre containers are now specified for packaging certain items that heretofore went into wooden boxes. The new specifications are said to apply to boxes for shipments of clothing, mosquito bars and similar material and to result in an 8.5% saving in army warehouse space, a saving in shipment costs and in the prices of the containers.

Fred Symington, head of the Association's research and development committee, also reported on the program of his group and its findings in relation to more effective production and use of paper boxes. The annual banquet was held on the evening of March 27.

### Packaging Exposition Draws Attention

Chicago will pay marked attention to the packaging industry next week when the Eleventh Annual Packaging Exposition gets under way at the Stevens Hotel. The dates are April 1 to 4 and the annual packaging conference will again be run in conjunction with this interesting event. Highlighted in this years program will be a pertinent discussion of current packaging problems with special emphasis on situations created by the defense program.

Included among the speakers will be E. A. Throckmorton, general manager of sales production of the Container Corporation of America, "The Economy of Packaging"; D. C. Everest, president, Marathon Paper Mills Company, "How Does The Defense Program Affect Packaging?"; H. H. Leonard, President, Consolidated Packaging Machinery Corporation; G. T. Henderson, director package laboratory, the Hinde & Dauch Paper Company; Warren Emley, National Bureau of Standards, "The Permeability of Fibre Containers to Water Vapor"; Alex Pisciotta, Committees on Standarization of Packaged Goods, "The Standardization of Container Capacities"; Ralph W. Marquis, Division of Forest Economics, U. S. Forest Service, "The Use of Forest Products for Shipping Containers"; A. W. Luhrs, Container Testing Laboratories, "Packing and Shipping Specifications on Army and Navy Shipments" and T. A. Carlson, Forest Products Laboratory, U. S. Department of Agriculture, speaking on "Corrugated Board And Its Component Parts As Engineering Materials".

A shipping container clinic will be held during the afternoon of the final day when fourteen companies will show box specimens and answer questions concerning their construction and performance.

## Dismantle Fort Madison Mill

The J. J. Ross Company, liquidator, dismantler and appraiser of pulp and paper machinery of every description, 250 Frelinghuysen avenue, Newark, N. J., announces that it has purchased the equipment of the mill formerly owned by the Chesapeake Corporation at Fort Madison, Iowa. The equipment includes 4 beaters, 1 Claflin, 1 78-inch 73-inch-trim single cylinder machine and all other auxiliary equipment.

This mill is presently being dismantled by the J. J. Ross Company, and will not be in operation again. Readers who have not as yet received a copy of Catalogue No. 48, showing list of equipment available for immediate delivery, should write to J. J. Ross Company for this circular.

# Paper Merchants Are Distributors

By J. K. Javits[1]

A period of national emergency, such as we are now passing through, is always a test of efficiency. When the industrial machine is called upon for a major effort there is a tendency immediately to examine the wastes and inefficiencies which might be indulged during less strenuous times. This is necessarily true because every man and woman; every organization and process; every talent and function in the whole business scheme must be made to count. In the field of distribution wastes in transportation, handling, selling, storing or servicing must be avoided for every person or facility employed in a non essential operation is one more person or facility not employed in the effort at maximum production for defense.

Under these circumstances paper merchants must apply to their own businesses acid tests of necessity. When they do so it becomes at once apparent that they must ascertain a standard for a basis of comparison. Just what function do they perform? In what economic group do they fit?

They have frequently been referred to as wholesalers and, in fact, in their relations with other trade groups they have been considered in the general wholesale category. During the early days of NRA the Paper Distributing Trade was classified as part of the paper industry but later, when weaknesses began to creep into NRA administration, the Paper Distributing Trade was considered part of the general wholesale trade. When a national organization of wholesalers was considered the Paper Distributing Trade again was classed in the general wholesaling trades.

### Technical Advice and Service

The Paper Distributing Trade must be classed as performing a function of distribution rather than a function of wholesaling. Only about 10% of the dollar volume of the wrapping paper division of the trade results from sales to retailers who in turn sell to consumers. Practically all the sales of the fine paper division, and the rest of the 90% of the sales of the wrapping paper division, move directly into conversion or consumption and are taken by commercial, industrial and retail users and consumers. Furthermore, in the fine paper division particularly, and to an increasing extent in the wrapping paper division, a considerable technical service is rendered by paper merchants in advising on appropriate papers for appropriate uses, in developing specifications for special papers adaptable for special uses, and in advising on methods of conversion or use of paper furnished in order to achieve the best results.

The distributing function is manifested particularly in the warehousing facilities and warehouse stocks maintained by paper merchants. These are comprised of literally thousands of items, grades and lines. The merchant's warehouse serves, in a large measure, as the customer's stock room, a purpose normally associated with retailing. This function entails materially increased costs and, in fact, recent surveys made by the National Paper Trade Association show that one of the key items of the paper merchant's cost is the warehousing expense. A large investment in fixed property is also required by this service facility.

### Not a Middleman

In considering the paper merchant as a distributor, rendering in addition an important technical service, we come to four conclusions: First, that the efficiency and economy of the distribution of paper and paper products cannot be tested by a comparison with the cost of distribution at wholesale of other commodities, but must either be considered on an absolute basis of the character of the facilities and services furnished, or by comparison with other distributing trades. Second, that the function of the paper merchant must be recognized as an essential one under any conditions because he is not a middleman passing on to another seller what he gets from a seller to him but he is rather the stock room and servicing agency combined of consumers and users who are themselves major units in other industrial and economic processes. Third, that being distributors paper merchants have the need to learn from retailers in the matters of diversification of stocks, techniques of handling orders and deliveries, and principles of inventory and price control. Fourth, that to protect their economic function paper merchants should seek trade organization with other trades similarly situated rather than with the strictly wholesaling trades; such other trades being, for instance, those of dealers in building materials, lumber, coal, store equipment, thread, and iron and steel products.

[1] Counsel The National Paper Trade Association.

## W. P. Rooney To Be Special U. S. Agent

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., March 31, 1941—W. Patrick Rooney, who has served as superintendent of claims for the St. Regis Paper Company, the Taggart Corporation, and associated companies, has received the appointment as special agent of the United States Department of Labor and will cover a territory covering all or parts of the states of New York, Pennsylvania, New Jersey, Maryland and Delaware. He will aid employers with technical problems in national defense work and in conserving manpower, being among several technicians selected for the task.

## Abitibi Saulte Mills Start

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., March 31, 1941—The Toronto office of the Abitibi Power and Paper Company reports that the Saulte Ste. Marie division recently completed the converting of one of their old board machines into a sulphite dryer from which dry sulphite board will be shipped in bales chiefly for the Western markets. The newsprint mill with a capacity of 556,000 pounds every twenty-four hours continues active as well as the sulphite pulp mill and other departments.

# EXPERIENCE FAVORS STONITE*

## *WHY EXPERIMENT?*

**STONITE TOP PRESS AND SMOOTHING ROLLS**

**(Ebonite and Granulated Stone Composite U. S. Patent 1,787,890 Re. 18,111)*

**Stowe-Woodward**

THE RUBBER ROLL SPECIALISTS

Newton Upper Falls, Mass.

## Cotton Paper Program Announced

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 2, 1941—A Federal program to encourage the use of low-quality raw cotton in the manufacture of high-grade writing paper was announced today by the Surplus Marketing Administration of the Department of Agriculture.

Similar to the 1940 cotton paper program, the plan calls for the diversion of up to 10 thousand bales of low-grade cotton to the manufacture of high-grade writing papers. Diversion payments will be made at the rate of 4½ cents per pound on 75% of the cotton used for this purpose by approved manufacturers. Transactions with manufacturers will be conducted through the Writing Paper Manufacturers Association, representing most of the makers. Non-member manufacturers may participate.

"The 1940 program," J. B. Wyckoff, Chief of the SMA Marketing Division, said, "demonstrated that cotton has many desirable qualities as raw material for the making of fine papers. This was the experience of 19 participating manufacturers who used 510,000 pounds of cotton of 16 grades, staples and qualities under the program last year.

"Since there are more than 500 recognized combinations of cotton and cotton fiber, the possibilities of their use on a commercial basis could not be fully determined by the limited 1940 program. The 1941 program is intended to provide greater opportunity for the use of various grades, staples and qualities of this raw product."

Manufacturers using raw cotton under the 1940 program found that preliminary treatment of raw stock was less expensive than for other materials, that treatment required smaller quantities of chemicals, that cooking processes required less time, that less power was consumed, and that quality of the finished paper was generally satisfactory, and in some cases, superior.

In commenting on the above program a competent authority states that, "Although the production of cotton goods has been increasing in recent years, there has not been a comparable increase in the supply of cotton cuttings usable in fine paper making. Many of the garments now produced have such extraneous materials as latex, acetate and rayon, as well as fast colors which cannot be bleached out and used in the ordinary course of paper making. Such new cotton cuttings are therefore either not usable or of little value as fiber for use in making rag paper. It is for this reason that rag content mills have been seeking an adjunct to the supply of rags and new cotton cuttings.

"Preliminary experiments with the use of cotton have indicated technical feasibility, and it is now planned to conduct a number of commercial experiments to develop further technical information and especially to gather cost information on the use of cotton in place of rags or together with rags."

## Government Paper Bids and Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 2, 1941 — Mudge Paper Company has been awarded the contract for furnishing the Government Printing Office with 2,250 pounds of 28 x 34, 100% rag, white bond paper at 22.23 cents, bids for which were received on March 10.

R. P. Andrews Paper Company will furnish 73,000 pounds (600,000 sheets) of 28 x 34, white sulphite writing paper at 5.46 cents. Also, Barton, Duer & Koch Paper Company will furnish 5,025 pounds (50,000 sheets) of 21 x 32, 100% rag, white writing paper. Mathers-Lamm Paper Company will furnish 8,736 pounds (56,000 sheets) of 38 x 48 lithograph finish map paper at 6.4 cents. Bids for all of these items were received on March 7.

Stanford Paper Company will furnish 644,100 pounds (11,300,000 sheets) of 19 x 20, white sulphite ledger paper at 5.9 cents. Bids for this were received on March 3.

Paper Corp. of U. S. will furnish 7,700 pounds of wood manila paper in 36" rolls, bids for which were received on February 28.

Printing Office has received the following bids for 40,000 pounds (250,000 sheets) of M.F. book paper; Paper Corporation of U. S., 16 cents; Whitaker Paper Company, 6.36 cents; Mudge Paper Company, 6.57 cents; Virginia Paper Company, 6.04 cents; Old Dominion Paper Company, 6.27 cents; Walker Goulard Plehn Company, 6.04 cents; R. P. Andrews Paper Company, 6.09 cents; Stanford Paper Company, 6.45 cents; Marquette Paper Company, 6.02 cents; Barton, Duer & Koch Paper Company, 6.17 cents; and Butler Company, 6.04 cents.

For 5,000 pounds (31,250 sheets) of 34 x 44 white sulphite bond paper: R. P. Andrews Paper Company, 6.35 cents; Old Dominion Paper Company, 5.79 cents; Stanford Paper Company, 7.45 cents; and Barton, Duer & Koch Paper Company, 6.59 cents.

For 45,600 pounds (600,000 sheets) of 22¼ x 32¼ M.F. book paper: Chicago Paper Company, 5.5 cents; Mudge Paper Company, 5.18 cents; Old Dominion Paper Company, 6.24 cents; Perkins-Goodwin Company, 5.24 cents; John F. Post, Inc., 5.5 cents; R. P. Andrews Paper Company, 5.13 cents; Stanford Paper Company, 5.18 cents; Barton, Duer & Koch Paper Company, 5.4 cents; Frank Parsons Paper Company, 5.25 cents; and Walker Goulard Plehn Company, 5.85 cents.

## Buys Paper Under Walsh-Healey Act

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 2, 1941—During the week ended March 15, the Government purchased $133,374.83 worth of paper and allied products under the Walsh-Healey Act as follows: $51,895.03 worth of bond paper for Navy, S&A, from Walker Goulard Plehn Company, Inc., N. Y. C.; $48,750.00 worth molded pulp faceforms for War, CWS, Chicago, from United Pressed Products Company, Chicago, Ill.; $11,366.78 worth roofing paper for War, Eng., San Francisco, from Certain-teed Products Corporation, Richmond, Calif.; and $21,363.02 worth of cards, paper for War, QMC, Texas, from Graham Paper Company, San Antonio, Texas.

## Black-Clawson Drives

Spiral bevel and hypoid drives are described in Bulletin No. 127-B, issued by the Black-Clawson Company, Middletown, Ohio. Six different types in 34 different sizes, built for strength and vibrationless operation, are available.

*(40" dia. x 274½" face Beloit Suction Couch roll.)*

The age of any piece of machinery is to be measured not in years but in its design, efficiency, cost of upkeep and most important of all, the returns that can be obtained from its use.

In a recent case, we rebuilt one of the first Beloit suction couches designed. A new box was furnished, mounted on heavy duty roller bearings and equipped with a Beloit patented floating packing holder. The suction area was increased from 6" to 10". The average speed increase of this machine on all grades of sulphate was 40' per minute.

On a book machine, we recently replaced an obsolete design of suction couch roll with a new patented Beloit couch. Among other improvements, the power saving alone was 25 H. P.

Therefore, if you are now operating with an obsolete suction couch roll on your machine, consider the above points. Among the many advantages to be gained from the installation of a new large diameter Beloit couch roll with cantilever rear journal are increased production, improved quality, power and wire saving and elimination of maintenance and shell replacement costs.

**DON'T BE SATISFIED WITH OBSOLETE EQUIPMENT. . . . Let us go into this problem with you.**

*Engineering MAKES THE MACHINE* **BELOIT**

# FINANCIAL NEWS

### New York Stock Exchange

High, Low and Last for Week Ending April 2, 1941

| | High | Low | Last |
|---|---|---|---|
| A. P. W. | 1½ | 1½ | 1½ |
| Armstrong Cork Co. | 28¾ | 28½ | 28⅝ |
| Celotex Corp. | 9⅛ | 8⅞ | 9⅛ |
| Celotex Corp., pf. | 68½ | 68 | 68 |
| Certain-Teed Products Corp. | 3⅞ | 3⅜ | 3⅞ |
| Certain-Teed Products Corp., pf. | 29 | 27½ | 29 |
| Champion Paper & Fibre Co. | 18¾ | 18¾ | 18¾ |
| Champion Paper & Fibre Co., pf. | 105 | 105 | 105 |
| Congoleum-Nairn Co. | 16¾ | 16 | 16 |
| Container Corp. of America | 14 | 13¾ | 13¾ |
| Continental-Diamond Fibre Co. | 8 | 7⅞ | 7⅞ |
| Crown-Zellerbach Co. | 13 | 12⅝ | 12¾ |
| Crown-Zellerbach Co., pf. | 86½ | 85½ | 85½ |
| Flintkote Co. | 13⅝ | 13 | 13⅛ |
| Robert Gair | 1⅝ | 1½ | 1½ |
| Robert Gair, pf. | 18½ | 16½ | 16½ |
| International Paper & Power | 13⅞ | 13¼ | 13½ |
| International Paper & Power, pf. | 65¾ | 64 | 64 |
| Johns-Manville Corp. | 59⅞ | 59 | 59 |
| Johns-Manville Corp., pf. | 126½ | 125 | 125 |
| Kimberly Clark Corp. | 32½ | 31½ | 32½ |
| MacAndrews & Forbes, pf. | 135 | 135 | 135 |
| Masonite Corp. | 24¾ | 23¾ | 24¼ |
| Mead Corp. | 8⅛ | 8 | 8⅛ |
| Paraffine Companies, Inc. | 30½ | 30½ | 30½ |
| Rayonier, Inc. | 13¾ | 13¼ | 13½ |
| Rayonier, Inc., pf. | 26 | 25½ | 26 |
| Ruberoid Co. | 17½ | 16⅜ | 17⅜ |
| Scott Paper Co. | 38½ | 37⅝ | 38½ |
| Scott Paper Co., pf. | 109 | 108½ | 109 |
| Sutherland Paper Co. | 22 | 21¼ | 21½ |
| Union Bag & Paper Corp. | 11⅝ | 11 | 11½ |
| United Paperboard Co. | 3 | 3 | 3 |
| U. S. Gypsum Co. | 63½ | 62¼ | 62½ |
| U. S. Gypsum Co., pf. | 173 | 173 | 173 |

### New York Curb Exchange

High, Low and Last for Week Ending April 2, 1941

| | High | Low | Last |
|---|---|---|---|
| American Box Board Co. | 4⅞ | 4¾ | 4⅞ |
| Brown Co., pf. | 17½ | 17½ | 17½ |
| Hummel-Ross Fibre Corp. | 5¾ | 5¾ | 5¾ |
| National Container Corp. | 12⅜ | 12¼ | 12⅜ |
| St. Regis Paper Co. | 2⅛ | 2 | 2 |
| St. Regis Paper Co., pf. | 89 | 86 | 87 |
| Taggart Corp. | 2⅜ | 2⅜ | 2⅜ |

## Consolidated Reports Small Profit

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., March 31, 1941—The more prosperous conditions now prevailing in the pulp and paper industry are reflected in the annual report of the Consolidated Paper Corporation Limited, which shows net earnings after all charges, including provision for fixed charges and generous depreciation allowance, equal to 34 cents a share on the outstanding capital stock. This is the first time since existing company was formed in 1931 that a net profit, after all charges, has been shown.

With production for the year up 29 per cent from the preceding year, gross income for 1940 was 65 per cent higher than for 1939 and showed an increase of 120 per cent as compared with 1938. Balance sheet position was substantially improved, net working capital being higher by $4,600,000, bank loans being entirely liquidated and cash position bettered very materially.

Operating profits and miscellaneous income for 1940 amounted to $7,058,704 as compared with $5,107,684 for 1939 and $3,824,590 for 1938. Included in the 1940 profits was $13,955 as profit from sale of investments and a transient profit of $1,420,481 from exchange, the latter amount representing 1⅝ times the entire "net income" noted above.

Bank loans that at one time were around $22,000,000 have been completely wiped out, the balance of $1,462,000 remaining at the end of 1939 having been repaid, and current assets in the past year increased from $12,103,003 to $16,558,019. The report states that present indications are that a substantial part, if not all, of interest due on the funded debt on July 2, 1941, will be paid in cash. (The arrangement provides for payment in cash or shares of capital stock). The company has now no liabilities in respect of bonds of subsidiary companies.

At the end of the year, the Hearst companies were indebted to the corporation for an amount of $1,494,566, of which $1,336,388 is represented by notes under discount and $158,178.

## B. C. Pulp & Paper Reports Profit

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., March 31, 1941—With its mills at Port Alice and Woodfibre, B. C., operating steadily on bleached sulphite and rayon pulp, B. C. Pulp and Paper Company, Vancouver, B. C., was able to report operating profits in 1940 amounting to $2,308,654, after charging $6,937 for timber depletion.

Major item in the list of deductions, however, is income and excess profits tax, provisions for which amounts to $850,000. Depreciation of properties is listed at $643,000 and future depreciation in inventory values $97,000.

The deficit at December 31, 1939, has been whittled down to $1,232,965.

Lawrence Killam, president of the company, points out that application has been made to secure a decision from the board of referees under the Excess Profits Tax Act, and that it is hoped the amount of $850,000 for all income taxes will be in excess of the amount required.

Prices appear to be stabilized to the extent that wide variations are not expected during the coming year.

During the past year, interest on the company's 6% first mortgage gold bonds was paid in full November 1, but no interest was paid on the company's 7% general mortgage gold bonds. No dividends were paid.

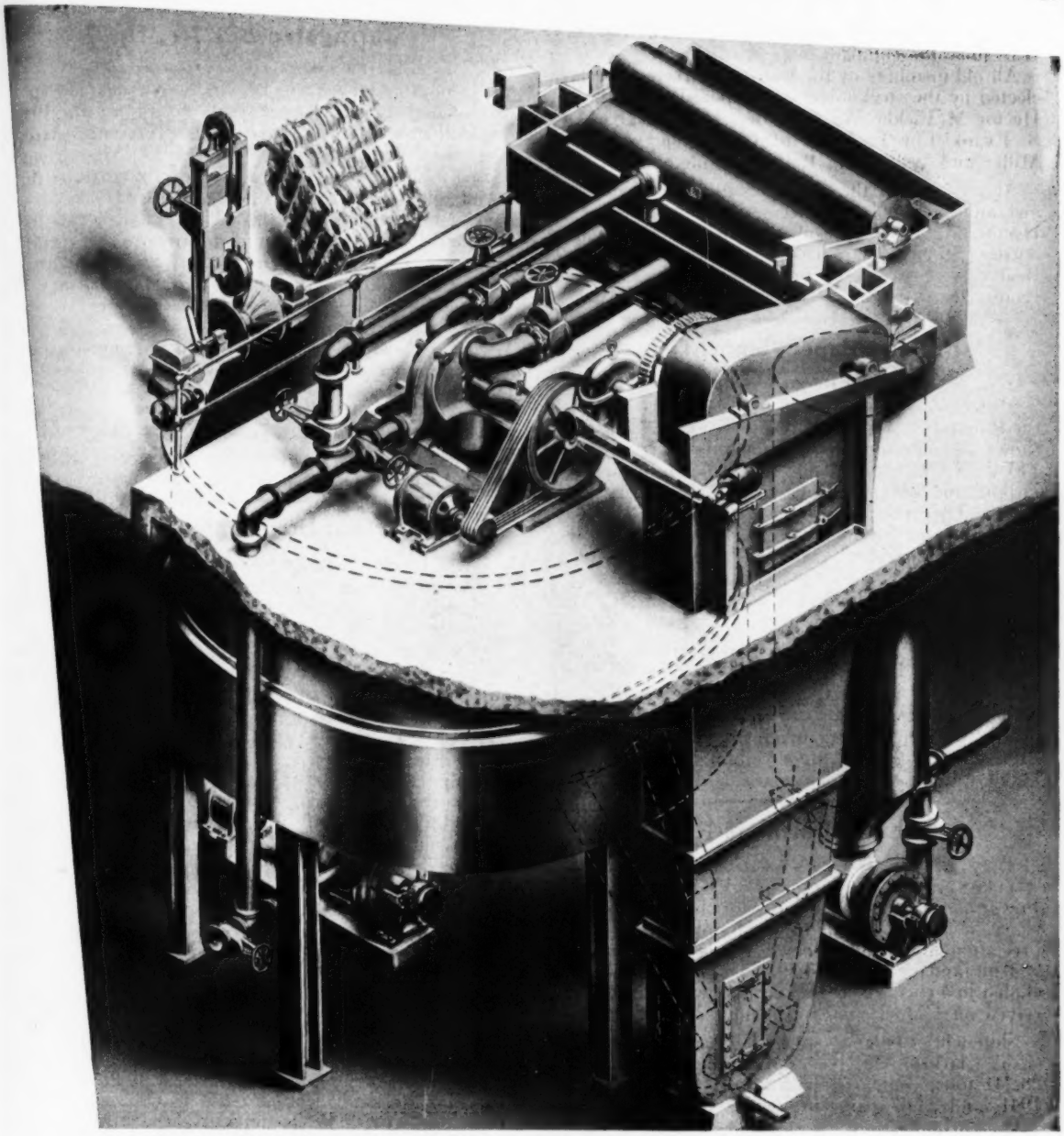
Mr. Killam emphasizes that under present conditions the earning of foreign funds from the export of over 90% of the company's products is of national importance.

## Chillicothe Makes Good Report

Directors and officers of the Chillicothe Paper Company were reelected and stockholders informed that the company earned a $96,879.01 profit for 1940.

Hector McVicker, president and Austin P. Story, vice president and treasurer, told the stockholders that 1940 was a very satisfactory year for the company. Net sales totaled $2,114,872.44.

Mr. Story also announced that the regular dividend on preferred stock had been declared. The company



Of the first thirty-nine mills to get the facts on the amazing Dilts-Cowles Hydrapulper, **thirty** have bought one or more for a total of **forty-five.**

Visit a Hydrapulper installation. Study it. Ask questions about it. Or write us and we will explain the entire system.

**Dilts Machine Works, Fulton, N. Y. Division of the Black-Clawson Company.**

**Dilts** *Hydrapulper*

has paid a dividend to preferred stockholders every year since the company was organized.

All old members of the board of directors were re-elected by the stockholders. The board members are: Hector McVicker, Austin Story, E. F. Bearce, Lyle S. Evans, Loy E. Hoyt, of Chillicothe, and O. A. Miller and William P. Baker of Columbus.

At the close of the meeting the board of directors met and reelected all officers. Reelected officers are Hector McVicker, president and general manager; Austin Story, vice-president and treasurer; E. F. Bearce, vice-president and chief engineer; and Mr. Evans, secretary.

## Rolland Paper Report Gains

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., March 24, 1941—The report of the Rolland Paper Company Limited for the past year shows a moderate increase in operating profit ($542,-140 vs. $509,288), but due to heavier provisions for income and excess profits taxes ($72,109 vs. $41,-598) and depreciation reserve ($191,542 vs. $158,651) net profit was lower at $161,724 as compared with $196,214 the previous year. This was equal, after the above deductions, bond interest and all other charges including preferred dividend requirements, to $1.19 a share on the common stock, compared with $1.77 the preceding year.

Jean Rolland, president, states sales showed a satisfactory increase over 1939. Additions to fixed assets amounted to $383,450, of which $350,736 was expended on a new paper making machine installed at St. Jerome. Increased depreciation is accounted for by allowance on this new machine, he states.

## Abitibi Earnings Rise

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., March 24, 1941—The Abitibi Power and Paper Co., Ltd., reports earnings for February of $517,915 prior to audit and charges for depreciation and bond interest, compared with $476,-993 in January and $389,595 in February, 1940. Included in February, 1941, earnings were $120,540 received on United States exchange.

Shipments of newsprint in February, according to G. T. Clarkson, receiver and manager, amounted to 28,241 tons, compared with 25,141 tons in January, 1941, and 23,675 tons in February, 1940.

Present indications are that shipments of newsprint in March, 1941, will be about 37,000 tons, compared with 26,964 tons in March, 1940.

Shipments of sulphite pulp in February, 1941, amounted to 6,401 tons, compared with 5,454 tons in January, 1941, and 5,590 tons in February, 1940. Present indications are shipments of sulphite pulp in March, 1941, will amount to about 6,250 tons, compared with 6,001 tons in March, 1940.

## Kimberly-Clark Net $29,332,195

The Kimberly-Clark Corporation and subsidiaries for 1940 in a pamphlet report show net sales of $29,-322,195, compared with $27,861,360 the year before. Current assets on December 31 last were $12,702,620 and current liabilities $4,567,646, compared with $11,-253,422 and $3,203,997, respectively, at the end of 1939.

## Corrugated Box Net Up

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., March 24, 1941—Corrugated Paper Box Company, Toronto, reports net profits for 1940 equivalent to $8.61 a share on its preference shares, compared with $9.10 a share for 1939. After paying $1.75 a share in dividends last year, arrears on this stock amounted to $15.75 a share.

Capital expenditures last year totalled $27,167. Principal items were a new high-pressure boiler in the Hilton Bros. plant at Winnipeg, two additional machines for Carton Specialties, Ltd., and balance of payment on a machine for the latter company received in December, 1939.

A bank loan of $10,250 shown a year ago has disappeared and the company reports cash on hand of $19,391.

Net earnings for 1940 were $113,153, compared with $81,130 in 1939; current assets $525,560 as against $445,170 the previous year; and working capital $407,342, compared with $339,328 in 1939.

## Robertson Box Co. Nets $89,793

At a meeting of the board of directors following the annual meeting of stockholders of the Robertson Paper Box Company, on March 21, two new offices were created.

Harry W. Schwartz, production manager, who has been with the company seventeen years, was elected vice-president in charge of production. Edward J. Bonville, sales manager, who has been with the company twenty-two years, was elected vice-president in charge of sales.

Ralph A. Powers was re-elected president of the company for the twenty-first consecutive year.

Philip L. Caldwell was re-elected vice-president, in charge of the New York office. Robert L. Page was re-elected secretary and treasurer.

The company reports a net income of $89,793 for 1940, compared with $94,581, for 1939.

## Central Fibre Nets $1.68

The Central Fibre Products Company reports for the 32 weeks ended February 8, 1941, a net profit of $506,458 or $1.68 per common share, compared with $395,491 or $1.14 per share for the like period in 1940. Net earnings for the fiscal year 1940 amounted to $712,224, equivalent to $2.20 per common share, compared with $356,033 or .53 per share for 1939.

## Votes Dividend

Modern Containers, Ltd., has declared an extra dividend of 10 cents a share on its common, payable along with the regular 20 cents payment, on April 1, 1941, to shareholders of record March 19. The company has been paying regular dividends of 20 cents a share quarterly, plus extras of 10 cents, over the past year.

## Union Bag Votes Dividend

Directors of Union Bag & Paper Corporation today declared a dividend of 25 cents a share on the company's capital stock, payable April 8 to stockholders of record April 5. Last year dividend payments were 15 cents a share in April and July, 25 cents in September and 45 cents in December.

OPACITY • WHITENESS • BRIGHTNESS

# THE "GO" SIGNAL ALWAYS IS ON IN TITANOX RESEARCH

"Good enough" is an expression which never has been applied to TITANOX pigments by their makers. That they are "most suitable for a specific purpose" is illustrated by the pigments which make paper products opaque, white and bright. These TITANOX pigments represent progressive development of titanium dioxide to its present high standard in its pure state and in composition. Are they capable of further improvement?

To learn the answer to that question is one reason why large, well equipped and capably staffed TITANOX laboratories are maintained where day after day the quest goes on for even better titanium pigments.

It is in these laboratories that the pigment requirements of the paper industry are investigated. Their findings are transmitted to you as the latest information regarding the application of TITANOX pigments to the paper industry.

**There are no better white pigments for paper making than:**

- **TITANOX-A** (titanium dioxide) most opaque of all white pigments.
- **TITANOX-B-30** (titanium barium pigment) as a filler or coating pigment.
- **TITANOX-C** (titanium calcium pigment) for coating.

*Whatever your pigment problems may be our Service Department will be pleased to give you the benefits of its knowledge and experience.*

**TITANIUM PIGMENT CORPORATION**

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111 Broadway, New York, N. Y. • 104 South Michigan Avenue, Chicago, Ill. • National Lead Company (Pacific Coast Branch) 2240 24th St., San Francisco, California.

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TRADE MARK

# CONSTRUCTION NEWS

**Pittsburgh, Pa.**—The Fort Wayne Corrugated Paper Company, 2001 East Pontias street, Fort Wayne, Ind., manufacturer of solid fiber and other boxes and containers, has approved plans for new branch plant on site in Stowe Township, near Pittsburgh, consisting of a main one-story building, about 260 x 320 feet, and accessory structures, to be equipped for large capacity. It is reported to cost over $200,000, with equipment. General erection contract has been awarded to the Austin Company, 16112 Euclid avenue, Cleveland, Ohio, and work is scheduled to begin at once.

**Cleveland, Ohio**—The Hinde & Dauch Paper Company, Sandusky, Ohio, manufacturer of corrugated boxes and containers, has completed plans for new addition to branch plant at 2110 West 110th street, Cleveland, consisting of a one-story structure, about 150 x 300 feet, reported to cost in excess of $85,000, including equipment. Construction is scheduled to begin in April. Award for structural steel framing has been made to Klein Structural Steel Company, Bellevue, Ohio. H. C. Robinson is manager of Cleveland branch.

**New Orleans, La.**—The Chase Bag Company, Army Supply Base, manufacturer of paper bags and containers, has superstructure under way on new local plant on site on Turning Basin in Inner Harbor Navigation Canal, previously referred to in these columns, and completion is scheduled during the summer. New building will be one-story, about 160 x 500 feet, and will be equipped for large capacity, including storage and distributing facilities. Structure will be owned by the Board of Commissions of Port of New Orleans, and occupied by company under long-term lease. It is reported to cost over $300,000, including equipment. Pittman Brothers Construction Company, 2800 North Galvez street, has the erection contract, and a number of sub-contracts have been awarded for plumbing, roofing, sprinkler system and other work.

**Chicago, Ill.** — The Container Corporation of America, Inc., 111 West Washington street, manufacturer of corrugated paper boxes and containers, is completing plans for new addition to local plant at 404 East North Water street, to be one-story, about 135 x 170 feet, reported to cost in excess of $100,000, with equipment. Facilities will be installed for large increased output. It is proposed to carry out work this spring. James B. Black, 520 North Michigan avenue, is engineer.

**Glendale, Cal.**—The Acme Paper Company, 4427 San Fernando road, commercial paper products, has completed plans for new one-story building at 545 North Garfield street, about 50 x 100 feet, for company headquarters, storage and distribution, etc., and will remove to new location on completion of structure, which will provide increased facilities. General erection contract has been awarded to E. L. Parker, 319 North Central street, Glendale, and erection will proceed at once. Cost estimated about $25,000, with equipment. John E. Mackel, 1126 North LaBrae avenue, Los Angeles, is engineer.

**Cleveland, Ohio**—Paper Board and Containers, Inc., recently organized, is said to be planning early operation of new local plant for the manufacture of paper boxes and containers. New company is represented by Rocker & Schwartz, Guardian Building, attorneys.

**Lufkin, Tex.**—The Southland Paper Mills, Inc., has authorized plans for expansion in mill, including enlargement of pulp mill, with installation of a complete new production unit for large increased pulp capacity for newsprint manufacture. Also will carry out extensions in ground wood mill for corresponding increase in raw material supply, with installation of new grinders and auxiliary equipment. Entire project is reported to cost about $2,400,000. To provide necessary financing, the board of directors will make application to RFC for a loan of about $1,500,000, and will dispose of a stock issue totaling approximately $900,000. It is understood that plans for new addition will be prepared by George F. Hardy, 305 Broadway, New York, N. Y., consulting engineer. Following completion of this expansion, it is proposed within the next 18 to 24 months, to increase capacity of paper-making division at mill.

**Kansas City, Mo.**—The Lloyd A. Fry Roofing Company, 5302 West 66th street, Chicago, Ill., manufacturer of roofing papers, prepared roofing, etc., has work in progress on new branch plant at North Kansas City, where tract of about five acres of land recently was acquired, as previously noted in these columns. Superstructure is being placed under way on new main production building, to be one-story, about 250 x 600 feet, and which will be supplemented with several smaller structures. New mill is reported to cost about $350,000, with equipment. The Hiram Elliott Construction Company, 1016 Baltimore street, Kansas City, Mo., has the general erection contract. Keene & Simpson, Land Bank Building, Kansas City, are architects. It is proposed to have the new plant ready for service late in the summer.

**Chicago, Ill.**—Paper Boxes, Inc., 77 West Washington street, recently organized with capital of $50,000, plans operation of a local plant for the manufacture of a line of paper boxes and containers. Incorporators of new company are Alexander Horback, A. L. Davis and Frank Proceda. Company is represented by Milton L. Goldberg, first noted address.

**Glens Falls, N. Y.**—The Imperial Paper and Color Corporation, manufacturer of wall papers, has approved plans for new one-story addition to mill on Warren street, 60 x 140 feet, estimated to cost over $60,000, including equipment. General erection contract has been awarded to C. E. Waggaman, 200 Glen street, and work will be placed under way at once.

**Chicago, Ill.**—The Universal Paper Products Company, 1104 South Wabash avenue, manufacturer of paper goods, has leased two floors in building at 815-23 South Wabash avenue, known as Munn Building, and will occupy for expansion.

**Wabash, Ind.**—The Container Corporation of America, Inc., 111 West Washington street, Chicago, Ill., manufacturer of corrugated boxes and

(IN CHINESE)

# This means PAPER ➔ 紙

# This means KENWOOD FELTS ➔

RECENTLY we found in the "KVP PHILOSOPHER," published by the Kalamazoo Vegetable Parchment Company, the Chinese character for "paper" and the story of its origin. It seems that when paper was invented in China about 105 A.D. a new character had to be created to describe it. Literally translated, it means, "having the personality of silk."

This was all so interesting that we asked a Chinese scholar to write for us: "Kenwood Felts." He said that, like his venerable ancestors, he would have to do so through characters which express the *qualities* of Kenwood Felts and he wrote those above. Literally translated, they mean: "Having great strength; having long life; having the ability to remove water easily; having the character of good finish."

The Chinese are very wise and understanding.

KENWOOD WOOL PRODUCTS

## F. C. HUYCK & SONS

ESTABLISHED 1870

**KENWOOD FELTS · ALBANY, N. Y.**

containers, has awarded general contract to W. R. Dunkin & Son, Huntington, Ind., for proposed new addition to paper mill at Wabash, recently referred to in these columns. It will be two-story, 80 x 80 feet, reported to cost close to $50,000, with equipment. Erection is scheduled to proceed at once. James Black, 520 North Michigan avenue, Chicago, is engineer.

**Neenah, Wis.**—The Kimberly-Clark Corporation, manufacturer of cover paper stocks, wall papers and other paper products, has awarded general contract to Ben B. Ganther Company, 78 State street, Oshkosh, Wis., for interior improvements in local mill, including remodeling of portion of plant, new machinery foundations, and other work. No estimate of cost announced. Work will be placed in progress at once.

**Thorold, Ont.**—The Beaver Wood Fibre Company, Ltd., manufacturer of newsprint, has approved plans for new addition to mill, consisting of a three-story structure, 90 x 160 feet, to be used for storage, distribution and other service. Cost reported over $125,000, with equipment. General erection contract has been awarded to the R. Timmins Construction Company, Ltd., 221 Burgar street, Welland, Ont., and superstructure will begin at early date.

**Cap Madeleine, Que.**—Consolidated Paper Corporation, Ltd., St. Maurice Division, Sun Life Building, Montreal, Que., manufacturer of newsprint, has completed plans for improvements in wharf at mill at Cap Madeleine, to be reconstructed for increased service; also will provide additional facilities for handling, loading, etc., and make improvements in bridge. Work will be carried out by day labor and is reported to cost about $40,000.

**Donnacona, Que.**—Donnacona Paper Company, Ltd., manufacturer of newsprint, insulating board, etc., is reported planning construction of a new power dam at Point Rouge for additional hydro-electric power development for service at mill at Donnacona. Project is estimated to cost close to $1,000,000, including station equipment.

### New Companies

**New York, N. Y.**—A. Price & Son, Inc., has been incorporated with capital of 250 shares of preferred stock, and 250 shares of common stock, no par value, to deal in paper products of various kinds. New company is represented by Shaine & Weinrib, 295 Madison avenue, New York, attorneys.

**Middletown, N. Y.**—The High Point Paper Company, Inc., has been organized with capital of $20,000, to manufacture and deal in paper products of various kinds. New company is represented by Barnard J. Sax, Gluck Building, Niagara Falls, N. Y., attorney.

**New York, N. Y.**—The Aywon Box Company, Inc., has been incorporated with capital of 200 shares of stock, no par value, to manufacture paper boxes and containers. New company is represented by Herman Scheckner, 551 Fifth avenue, New York, attorney.

**Green Bay, Wis.**—Tape, Inc., has been organized to manufacture and deal in paper tape and allied paper goods. Incorporators include D. M. Murray and George N. Burridge, Green Bay. Last noted is credit manager for Hoberg Paper Mills, Inc., Green Bay.

## American Equipment for Brazil

Johnson & Wierk, Inc., 415 Lexington avenue, New York, have been appointed consulting engineers for the new paper mill to be built in Brazil by Industrias Klabin do Parana, of Sao Paulo, Brazil. A decree issued by President Vargas of Brazil has appropriated $3,000,000 for the project, which is estimated to cost $4,500,000. The company engineers are Dr. Ernest Froelich and W. Brubacher, 55 West 42nd street, New York, formerly associated with the Kimberly-Clark Corporation.

Industrias Klabin do Parana now operate two mills, one at Rio de Janerio and the other at Sao Paula. The latter mill is equipped with four machines and produces kraft paper, board and book papers. The groundwood mill has a capacity of 20 tons daily, using Brazilian Parana pine. At this mill bamboo fiber is also used to produce pulp for paper board.

Samuel Klabin, representing the Brazilian concern, with New York office at 55 West 42nd street, stated that contracts have been placed for a part of the equipment for the new Parana mill. It will have a capacity of 100 tons of chemical pulp, 100 tons of groundwood and 150 tons of newsprint daily.

Mill equipment already on order includes the following:

Bagley & Sewall Co., Watertown, N. Y.

1—192-inch Fourdrinier, to operate at a speed of 1,400 feet per minute and with a capacity of 150 tons of newsprint per 24 hours.

1—120-inch rebuilt cylinder board machine.

1—partly rebuilt cylinder machine for tissue paper.

The Bagley & Sewall Co. will also supply various auxiliary equipment.

Sandy Hill Iron & Brass Works, Hudson Falls, N. Y.

4—grinders and a complete bleaching plant.

The three digesters on order will be supplied by the Dominion Bridge Company, Montreal, Canada. Other equipment to be ordered at a later date includes a hydro-electric plant of 18,000 h.p. and a pulp drying machine. It is expected that the new Parana mill will supply a very substantial part of Brazil's requirements for pulp.

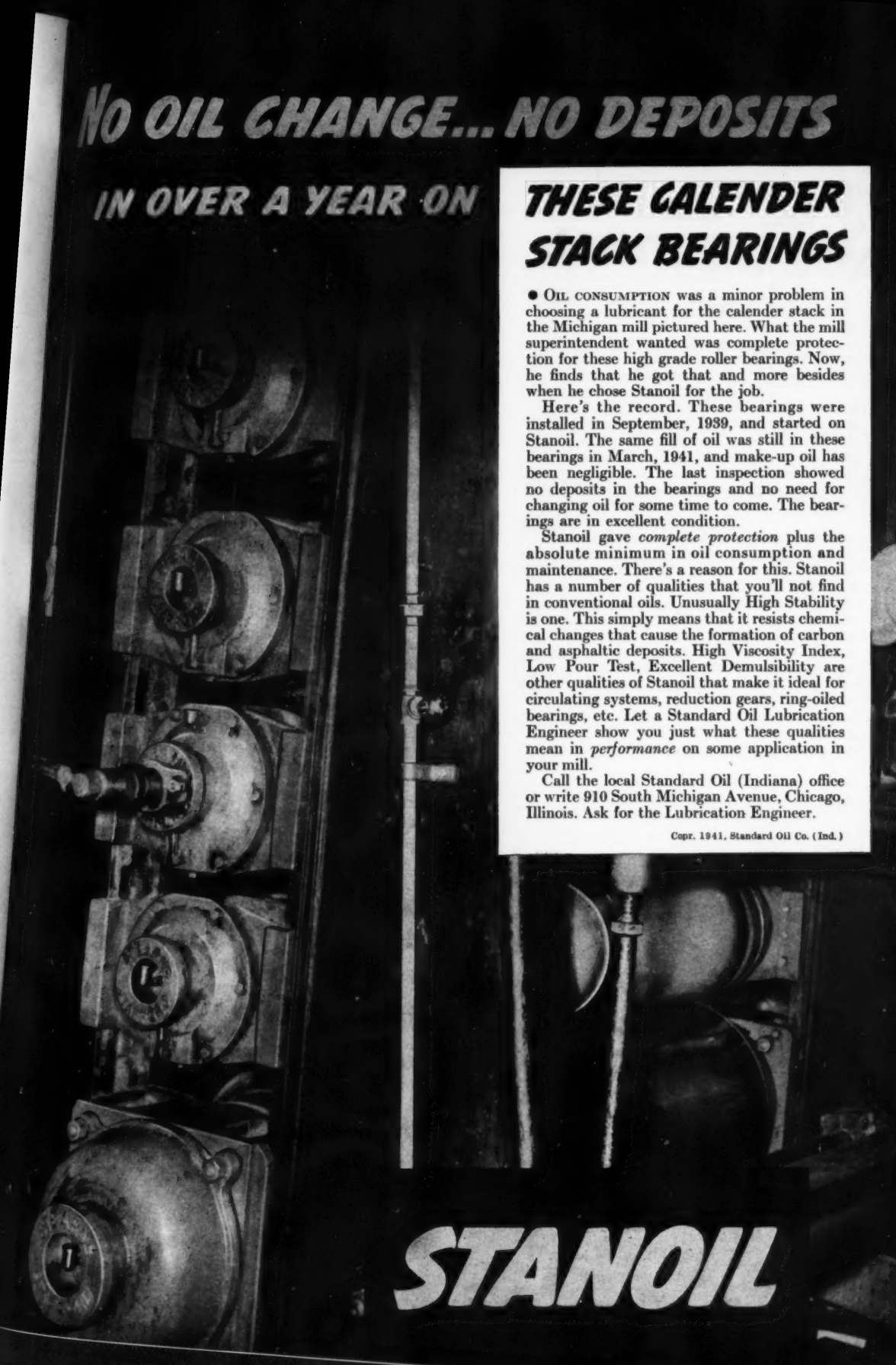
The company owns 100,000 acres of timber lands of Parana pine, *Araucaria Brasiliense*. American foresters have estimated that the Brazilian forests contain more than 350,000,000,000 board feet of Parana pine. The sapwood is light yellow and is easily bleached. The wood contains no rosin and the fiber is very long, being 4.50 millimeters in length.

## To Hold Reception at Kalamazoo

The allied trades and their representatives cordially invite the members and their friends of the American Paper and Pulp Mill Superintendents Association to a reception to be held in the Club Rooms on the first floor of the Park American Hotel, Kalamazoo, Mich. at the time of the Annual Ladies Night Dinner Dance beginning at 6 o'clock P.M. sharp, Saturday, April 19, 1941. Suppliers and their representatives should contact the Chairman, Olin W. Callahan, at 117 East Belmont avenue, Kalamazoo, Mich., either by phone, by letter or in person, and ask about their Host Badge. It was the concensus of opinion that a better time could be had by all if the pre-dinner entertainment were carried out in the club room instead of individually.

# NO OIL CHANGE... NO DEPOSITS

## IN OVER A YEAR ON THESE CALENDER STACK BEARINGS



• OIL CONSUMPTION was a minor problem in choosing a lubricant for the calender stack in the Michigan mill pictured here. What the mill superintendent wanted was complete protection for these high grade roller bearings. Now, he finds that he got that and more besides when he chose Stanoil for the job.

Here's the record. These bearings were installed in September, 1939, and started on Stanoil. The same fill of oil was still in these bearings in March, 1941, and make-up oil has been negligible. The last inspection showed no deposits in the bearings and no need for changing oil for some time to come. The bearings are in excellent condition.

Stanoil gave *complete protection* plus the absolute minimum in oil consumption and maintenance. There's a reason for this. Stanoil has a number of qualities that you'll not find in conventional oils. Unusually High Stability is one. This simply means that it resists chemical changes that cause the formation of carbon and asphaltic deposits. High Viscosity Index, Low Pour Test, Excellent Demulsibility are other qualities of Stanoil that make it ideal for circulating systems, reduction gears, ring-oiled bearings, etc. Let a Standard Oil Lubrication Engineer show you just what these qualities mean in *performance* on some application in your mill.

Call the local Standard Oil (Indiana) office or write 910 South Michigan Avenue, Chicago, Illinois. Ask for the Lubrication Engineer.

Copr. 1941, Standard Oil Co. (Ind.)

# STANOIL

# TANDARD OIL COMPANY (INDIANA)

ING...LUBRICATION ENGINEERING...LUBRICATION ENGINEERING...LUBRICATION ENGINEERING...LUBRI

PAPER TRADE JOURNAL
This Reg. U. S. Pat. Off.
Henry J. Berger
EDITOR

Vol. 112 April 3, 1941 No. 14

## COMING EVENTS IN PAPER INDUSTRY

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

AMERICAN PULP AND PAPER MILL SUPERINTENDENTS ASSOCIATION, Twenty-second Annual Convention, Poland Spring House, Poland Spring, Me., June 17-19.

## MORE CASH NEEDED

An explanation of the unsolved problem of unemployment and its adverse effect upon the national economy was issued by the World Peace Foundation on March 25. It states in part that, "prior to 1929, most citizens between the ages of 10 and 75 were gainfully employed by the nation's business in productive enterprises. Only 3½ million were unemployed between 1926 and 1929, mostly between jobs. In those days, federal debt and budgets were negligible. (a) An equally puzzling economic phenomenon is the persistent inability of American farmers, who produce such raw materials as cotton, wool, livestock, corn and wheat sold to factories for processing into groceries, meats, leather and clothing, to market all they produce at a just price and just profit. f.o.b. farm, not only to processors; but also to ultimate consumers and taxpayers at the top of our national economy. (b) It is commonly agreed that process taxes to supplement wholesale prices—destruction of surplus corn, wheat and livestock to create scarcity and inflate retail prices of farm output—government purchases of surplus farm products to finance carry-over into famine years—and subsidies to farmers for reducing acreage and plantings are by no means a desirable repair job of our defective machinery of distribution. The object of producing farm products is to sell them to consumers, not to hoard or destroy wealth produced."

Continuing, the article points out that, (c) "Congress has given no thought to supplying our millions of unemployed and disabled citizens with clean cash buying power, who lacked $29 billions of customary family income, yearly, between 1930 and 1940: $30 a month old age pensions, and paid for by employed consumers out of their weekly wages have not gone very far towards bridging this immense gap in our clean cash, tariff-protected domestic market. (d) Another equally incomprehensible economic fact is that business mortality is highest among wholesale and retail distributors of commodities; and only heavily capitalized department stores, chain store systems and mail order houses have survived the panic of 1929. (e) Bankers and economists also condemn retail merchants for selling their commodities to wage earners on a time payment basis; particularly by use of 12, 18 and 24 months conditional bills of sale."

In support of the statement that the cash balance of the American family is insufficient to buy sufficient goods to absorb all the nation's production, the article gives the following statistics of the family budget, year of 1929, as follows: consumer income budgeted to services, consumer earned income, wages, $69,484,647, 678; consumer unearned income, savings, $17,306,560, 992; America's family income, cash, $86,791,208,869; budgeted to services, $47,765,052,223; cash balance for goods, $39,026,156,645. In commenting on the above, the article states that, "All 'services' are sold to the American people upon a C.O.D. basis and the result is that the nation's ultimate consumers have only 45% of their family income left over with which to buy food, clothing, comforts and luxuries for cash. This cash balance ($39 billions) budgeted to 'goods' is not enough to convert raw materials and processed commodities into cash, 100% by aid of American wholesale and retail distributors."

In computing the carry-over from 1929 into 1930 by subtracting from the productive inventory of $58,369,984,718 consumer retail credits of $11,007,694,147, a carry-over of $47,363,290,571 is obtained. "This $47 billion carry-over, of farm and factory products", the article declares "is the cause of all our social and economic troubles and this cause must be remedied before its effects will cease to create famine in the midst of plenty, industrial strife, periodic panics, business depressions and war between nations from generation to generation. What then is the remedy? This $47 billion dollar vacuum in America's clean cash, tariff protected domestic market cannot be bridged by use of confiscatory taxation levied against profits, surplus, savings and capital gains of the nation's business—by National Labor Relations Board, by the wages and hours bill, by legalized collective bargaining and sitdown strikes against private capital, —by the use of federal, state and local tax revenues abstracted from the weekly pay envelopes of employed consumers and by inflationary use of interest bearing mortages on the homes, farms, income and savings of the American people, 82% of which must be absorbed by banks, insurance companies, and large corporations to prevent collapse of government credit, and consequent national bankruptcy. Labor expenditures of $69 billions must be made to equal retail value of $69 billions, of national wealth produced so as to make consumption equal production of both

goods and services, dollar for dollar, from generation to generation. This can only be done by the use of public money and credit issued by taxpayer owned municipal national banks in order to finance government and business payrolls and pensions independently of private capital, tax revenues and the interest bearing public debt."

In considering this plan, which is but one of many which have been advocated and presented to business men since the slump in business in 1929, the support given by statistics is impressive. But, other theories have been advanced which are attractive as theories but which have never been adopted, presumably because they have been viewed as impracticable in the circumstances. The problem of unemployment is a complex problem and technological advances have made it and continue to make it more complex; the changing state of international trade as occurring in the paper and pulp industry and in the marketing of many products, is also an important factor; the steady expansion of government controls, and the great political confusion in the struggle now in progress in Europe, and which is more and more being felt in this country, are likewise important factors which cannot be adequately determined when the world is in a state of flux. It is for this reason that the future readjustment of political, social and business problems appears almost an impossibility today, but the courage and ability of men must be depended upon to profit by the mistakes which have been made. There is no good reason to doubt the achievement of a more stable and equitable balance between all nations in the future than that experienced in the past.

## Sealright Asks Brotherhood Charter

FULTON, N. Y., March 31, 1941—An application for a charter in the International Brotherhood of Papermakers was filed by the Oswego Falls-Sealright Company following a meeting of employees early last week. The meeting was attended by about 400 employees. Application for the charter was turned over to Jacob Stephan, representative of the International Brotherhood of Papermakers, who attended the meeting with other labor officials. It was announced that the workers showed a desire to become identified with the American Federation of Labor and that about 75 per cent of the employees had already signed. Organization of the local will be perfected at another meeting when it is expected that temporary officers will be selected. Other speakers at the meeting were Michael J. Walsh, union organizer, and William Kelly, a union officer at the plant. An independent union has been in existence at the plant since 1937 when it was organized.

## Monadnock Mills More Active

BOSTON, Mass., March 31, 1941—At the sales office here of the Monadnock Paper Mills of Bennington, N. H., it was stated that business has improved in recent weeks, with the mill now behind on deliveries.

## Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

| Current Weeks, 1941 | | Corresponding Weeks, 1940 | |
|---|---|---|---|
| February 15 | 88.4 | February 17 | 86.6 |
| February 22 | 89.6 | February 24 | 86.8 |
| March 1 | 88.9 | March 2 | 83.5 |
| March 8 | 90.1 | March 9 | 83.4 |
| March 15 | 89.9 | March 16 | 84.5 |
| March 22 (Prelim.) | *91.8* | March 23 | 85.0 |

COMPARATIVE MONTHLY SUMMARIES

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July |
|---|---|---|---|---|---|---|---|
| 1940 | 90.2 | 86.2 | 83.9 | 86.3 | 91.8 | 93.8 | 87.1 |
| 1941 | 84.8 | *89.1* | ... | ... | ... | ... | ... |

| Year | Aug. | Sept. | Oct. | Nov. | Dec. | Year Avg. |
|---|---|---|---|---|---|---|
| 1940 | 87.2 | 83.2 | 88.0 | 86.9 | 83.2 | 87.5 |
| 1941 | ... | ... | ... | ... | ... | ... |

COMPARATIVE YEARLY SUMMARIES

| | 1935 | 1936 | 1937 | 1938 | 1939 | 1940 | 1941 |
|---|---|---|---|---|---|---|---|
| Year to Date | 68.3 | 76.6 | 90.3 | 67.1 | 80.9 | 87.4 | *87.8* |
| Year Average | 70.5 | 81.3 | 80.6 | 72.3 | 84.9 | 87.5 | ... |

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

PAPERBOARD OPERATING RATIOS †

| Year | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Year Avg. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1936 | 62 | 67 | 67 | 70 | 69 | 70 | 69 | 75 | 78 | 82 | 80 | 74 | 72 |
| 1937 | 80 | 86 | 86 | 88 | 85 | 77 | 66 | 74 | 69 | 65 | 55 | 45 | 73 |
| 1938 | 54 | 60 | 61 | 57 | 58 | 56 | 57 | 66 | 66 | 70 | 65 | 59 | 61 |
| 1939 | 60 | 67 | 71 | 69 | 64 | 67 | 63 | 72 | 74 | 84 | 81 | 71 | 70 |
| 1940 | 71 | 70 | 69 | 70 | 76 | 79 | 72 | 74 | 72 | 79 | 77 | 71 | 73 |
| 1941 | 75 | *81* | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. |

Week ending Feb. 15, 1941—81
Week ending Feb. 22, 1941—80
Week ending March 1, 1941—82
Week ending Mar. 8, 1941—80
Week ending Mar. 15, 1941—82
Week ending Mar. 22, 1941—*82*

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Assn.

## Simplification Practice for Insulation

The Insulation Board Institute, representing manufacturers and distributors of the vegetable fibre type of structural insulating board, has drafted a proposed Simplified Practice Recommendation for structural insulating board and the cooperation of the Division of Simplified Practice of the National Bureau of Standards has been requested in submitting the proposal to the manufacturers, distributors, architects, building contractors, and others interested, for consideration and approval.

The proposed recommendation concerns not only the sizes and thicknesses but the treatment of corners for various structural insulating board products.

The recommendation, when accepted by the industry, will be promulgated by the U. S. Department of Commerce as representing the standard practice in manufacturing this type of insulating board.

Mimeographed copies of the recommendation may be obtained from the Division of Simplified Practice, National Bureau of Standards, Washington, D. C., upon request.

## Carter Rice Holds Sales Meeting

BOSTON, Mass., March 31, 1941—A breakfast sales meeting of Carter Rice & Co. Corporation with the Oxford Paper Company, Rumford, Me., was held Saturday morning, March 29, at the Parker House, when products of the Oxford company were discussed and plans made for the coming season. President Charles A. Esty, of Carter Rice & Co. Corporation presided, with the following executives from the Oxford Paper Company present: Charles A. Gordon, first vice-president; N. R. Hopkins, L. W. McFail, Harold Annis and T. G. Peel.

# METHOCEL

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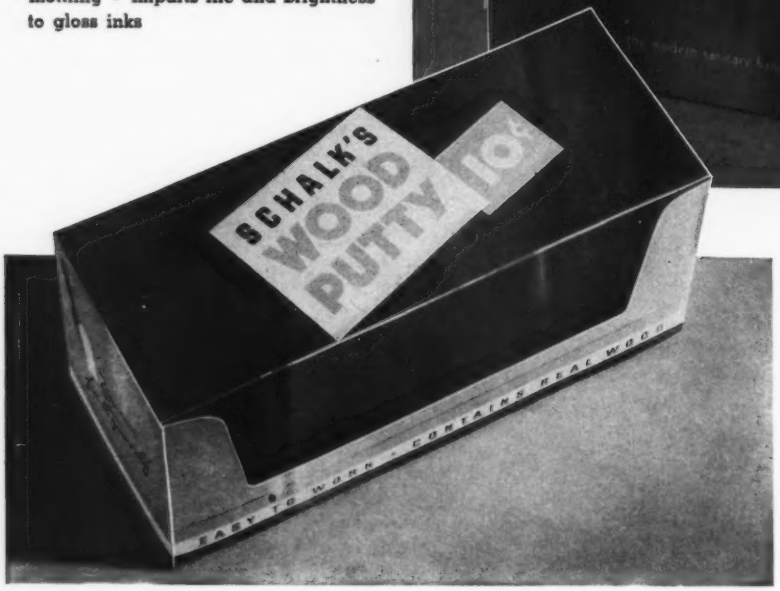


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Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald. Secretary

# Continuous Cutting Chippers*

By N. P. Wardwell[1]

**Abstract**

*Small chippers are least expensive in first cost and upkeep and make better chips with the same capacity as large ones if properly powered and fed. The spout angle, type of bedknife, wear on disk and the crushing effect of a chipper on the fibers are discussed.*

The best chipping quality is obtainable when knives are close enough together so that two knives can catch the smallest stick at one time.

## Selection of Chipper Size

In selecting a chipper many mill men think too much in terms of labor saving. They want to cut out splitting and handling expense, and so they ask for chippers with big spouts for their large logs. This makes the machine more expensive in first cost and upkeep and lowers the quality of the chips.

Large chippers are more expensive in first cost obviously, because a larger spout with the correspondingly longer disk knife means a larger diameter disk and consequently heavier machine throughout, even though the capacity required and the power installed may be relatively low. The disk and pulley must be heavier to provide enough flywheel effect. A motor of 150 horsepower is enough to chip 20 to 25 cords per hour of softwood; but while chipping 17-inch spruce logs 4 feet long, the power will be about 1000 horsepower for a period of 1 second. If one expected 17-inch logs one after another continuously you would need 1000 horsepower installed. In that case you would turn out chips at the rate of 150 cords per hour. Since only an average of 20 to 25 cords per hour is required, there will be breathing spells between logs that enable the disk to regain momentum. So with the speed gained between sticks or while chipping small ones, the disk and pulley have enough flywheel effect to take care of most of the overload, enough so that the motor slows down 10 to 15% of full load speed. Engineers say this amount of slip is not harmful. The motor speed is held within these limits by the disk and pulley acting as a flywheel which must be heavy enough for that purpose.

The chips from small logs are not as good on big chippers as on small ones, especially when hardwood is used, because the knives must be farther apart to provide metal section enough to stand the heavy shocks of chipping big logs. A 16-inch log requires four times as much power as an 8-inch log. Although this strain may be divided among more knives, still it is only reasonable that more section is required, and so the knives must be farther apart.

One question that comes to us from nearly all inquirers is: "what is the capacity of a certain size 10-knife chipper?" The answer is that capacity does not depend on size but on the power available and the ability to feed. A small chipper with a 10-inch spout and 200 horsepower drive attached can turn out 30 cords per hour of softwood if the feeding arrangement is right. A chipper with a 19-inch spout and 200 horsepower drive cannot turn out any more than that. Sometimes logs come along the conveyor in bunches as discharged from the drum, and in the natural course of events the operator would pull them all into the spout at once. This is not good practice theoretically because small logs may be forced to the outside where the knives are far apart, and dancing and jams occur just as in the 4-knife chipper. The results are surprisingly good even with this condition. Nevertheless when theory of one method is better, and the practice of that method is feasible, we believe in using it. When conveyors are designed for logs lying crosswise, they feed the logs automatically one at a time into a spout leading off nearly at right-angles. This works well even when bunches come. The operator merely holds them back a little but not for long because the chipper works so fast, therefore a small spout is not a bottle neck even for this condition.

## Electric Motor Conditions

Synchronous motors are good when the load is constant. The 12-, 16-, or 20-foot logs like those used on the west coast or for a small chipper cutting 8- or 10-inch diameter logs and requiring a high capacity, they are the best type of drive. The power factor correction, the increased electrical efficiency without heat losses from slowing down, and the increased capacity, because cuts per minute do not drop off during a big stick, make the synchronous motor desirable. However, in most wood rooms the chipping load is so variable that induction motors are better suited. The high-slip squirrel cage or the wound-rotor types are recommended. In the case mentioned before the load varies from 0 to 1000 horsepower. If a synchronous motor were used, it

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Roosevelt Hotel, New York, N. Y., Feb. 17-20, 1941.

[1] Member TAPPI, Secretary-Treasurer, Carthage Machine Co., Carthage, N. Y.

would need to be large enough so that the combined rating and pullout torque equalled 1000 horsepower. These sudden peak loads on the power line are sometimes undesirable. But with an induction motor the 150-horsepower size would be sufficient with the aid of the flywheel effect of the chipper. It is not as efficient because heat losses mount up when the disk slows down, but everything considered the economics of this type seems better.

It is possible to direct-connect induction motors. The rotors can be mounted on the chipper shaft just like the synchronous type. However, we prefer using flexible couplings because the air gap is smaller between rotor and stator than in synchronous motors. When the chipper disk is moved endwise to adjust for knife clearance, if the motor rotor moves with it, the stator must be moved the same amount to keep the air ducts properly in line. This is a nuisance that might cause neglect of close adjustment.

### Research Possibilities

Several much discussed questions about chippers were never capably settled, because bouncing logs made it difficult to duplicate conditions in order to test chipping results before and after one isolated element was changed. But now that obstacle has been overcome.

The 52-degree angle spout has much in its favor. The cutting is a little cleaner, because it is more with the grain than the 45-degree spout, and it exposes a longer cross section of log to the disk; so that a smaller stick will be caught by 2 knives. But recently the point has been brought up that the wear on the disk is greater with this angle as shown in Fig. 1. If we assume a downward force from the knife of 10,000 pounds, then the component normal to the 45-degree spout slope and at the same angle toward the disk is 7070 pounds or 5650 pounds when deducting 20% for friction. In the 52-degree spout the component normal to the spout slope is 6000 pounds and that toward the disk is 8000 pounds or 6400 pounds when deducting 20% for friction. The horizontal components of these forces toward the disk for both angles are about the same, but 5650 pounds for the 45-degree spout and 6400 pounds for the 52-degrees are the forces that actually count, because they are aimed right at the chip opening edge where the wear on the disk starts. Data will soon be available to decide if this higher pressure is harmful enough to outweigh the advantages of the 52-degree spout. In the meantime our experience favors the 52-degree angle.

The sloping bedknife, the patented Andrews type, Fig. 2A, forms part of the spout which can be removed easily for sharpening. There is no projection on it when properly set that might catch the wood as it comes down to make it tip up. Some

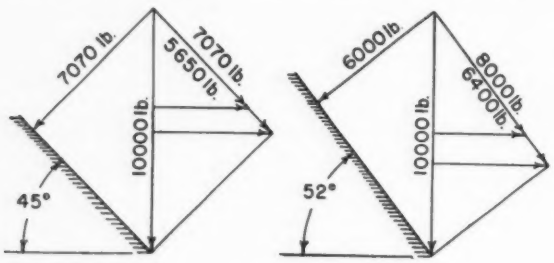



Fig. 1

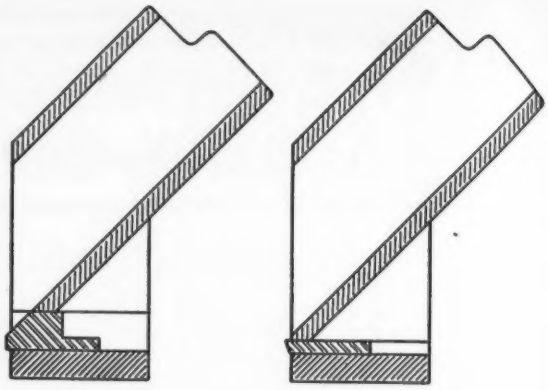


Fig. 2 A Fig. 2 B

people have questioned the efficacy of this type of cutting edge. They say that bottom strands of fiber have more chance to bend down between it and the disk knife without being cut than with the flat-type knife, Fig. 2B. This latter type would bite into the logs more and prevent these strands slipping past without being cleanly cut. A new spout was installed in a mill with a 10-knife chipper in which the bedknife slope was flattened out a little to take the wear off the metal of the spout. This is a little nearer to the flat bedknife idea. The power increased very noticeably. When we went back to the old spout it dropped back to normal.

In the 4-knife chippers the wear on the disk as shown in Fig. 3A was harmful because the wave effect made the log bounce and roll. In the new chipper the knives are so close together that the wear is as shown in Fig. 3B, parallel to line *AB*. It may wear more on the inside than farther out but this could be ground off so that the chip would be uniform all the way out. The wear will undoubtedly slow up as the surface of contact increases. Aside from gradual loss of metal no harmful effects of this wear in chip quality have resulted.

Last January, H. Green and H. Yorston of the Forest Products Laboratories of Canada stated that chips made on a chipper gave lower pulp strength than chips cut out with a saw or other laboratory means. They claimed the chips were damaged by a crushing action in the chipper. This crushing action may be influenced somewhat by the angle of the spout, and this can now be determined. It can be relieved more by grinding off the surface of the disk parallel to the line *AB* shown in Fig. 3B, thus giving a greater surface for the log to press against and thus decreasing the pressure per square inch which can damage the chip.

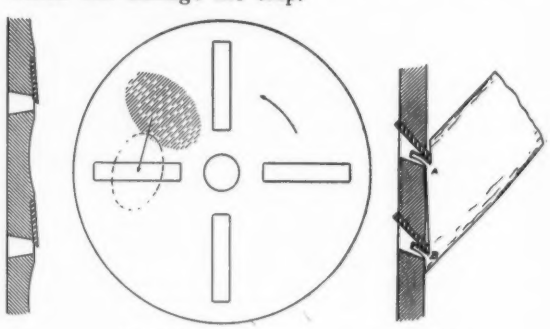


Fig. 3 A Fig. 3 B

# Feed Water Control in Minnesota and Ontario Paper Mill*

By H. E. Einert[1]


## Abstract

*Surveys were conducted which revealed high oxygen and low pH in feed water and excessive mud and algae in zeolite softeners. By improving deaeration, recirculating boiler water, installation of sand filters ahead of zeolites, and application of supplemental treatment, the source of trouble was removed. A control was inaugurated whereby all constituents pertinent to the feed water and boiler water are frequently checked to insure continuity of operation and low treating costs.*


The steam plant in a paper mill is often termed a "necessary evil" for the simple reason that the steam plant in this industry, as well as in industries generally, is supplementary to the final product. Steam costs are an appreciable item in the manufacture of pulp and paper and anything that can be done to keep treatment costs down and to insure continuity of the steam and steam-operated equipments reflects itself in a final low cost per ton of pulp or paper.

This plant operates five 1000 horsepower Heine bent-tube boilers, with complete water walls and two 500 horsepower Erie City straight-tube boilers at 450 pounds per square inch pressure, 125 deg. F. superheat; four 400 horsepower Babcock & Wilcox straight-tube, cross-drum boilers which are operated at 130 pounds per square inch pressure. The steam load on the average is about 10,000,000 pounds per 24 hours, and the rating on some of the boilers reaches a peak of 350%.

## Corrosion

The flow diagram of the water cycle from the river to the boilers is shown in Fig. 1. River water, which is low in hardness and solids, relatively high in color and normal in turbidity, is pumped through sand filters from which point the water then passed through zeolite softeners. Coagulant and alkali are added ahead of the sand filter for flocculating the suspended matter. Softened water make-up, which comprises about one half of the feed water then enters a surge tank, at which point returns from the wall board division and oily returns from the paper machine enter. After the water leaves the surge tank, alkali and coagulant are added; it then passes through a Permutit oil removal system. The combined feed water then enters a Cochrane deaerating heater, from where it is pumped to the economizers in the case of the high-pressure boilers, and then to the boilers; or, directly to the boilers in the case of the low pressure system.

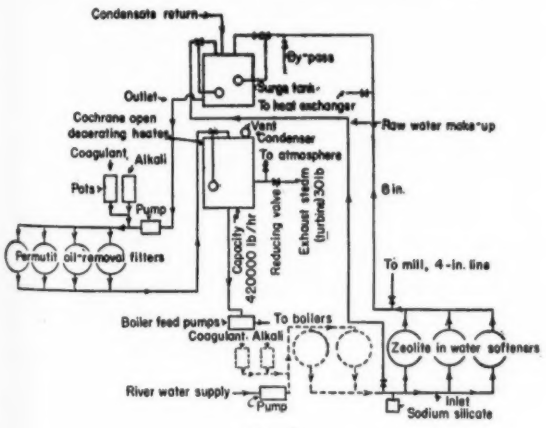



FIG. 1

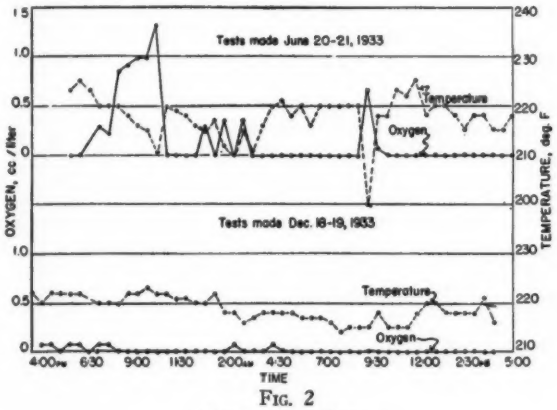



FIG. 2
Heater Outlet Water

In June, 1933, a 24-hour survey was conducted which included the determination of oxygen every half hour in the river water, zeolite-treated water, condensates, feed water from the heater, economizers, and condensed steam. In addition to this, alkalinities, chlorides, pH, and carbon dioxide were determined on the waters every hour. Mineral analyses of each of the waters composited over the survey period were subsequently made and the results of the survey and laboratory analyses were used as a basis for recommendations.

Relative to the matter of corrosion, it was found that considerable oxygen gained entrance to the boilers, as a result of improper deaeration. In Fig. 2, the upper curves show the relationship of the oxygen content of the feed water and the temperature of the water in the deaerating heater. Whenever the temperature of the water dropped, the oxygen content rose quite appreciably. The temperature of the heater should be more uniform and somewhat higher on the average to be sure that the oxygen content of the feed water is at a minimum.

In Fig. 3, Curve 1, the pH of the feedwater at the economizer is shown. The pH varies between 7 and 8 which is too low to inhibit corrosion of the economizers. The oxygen content should be as low as

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Roosevelt Hotel, New York, N. Y., Feb. 17-20, 1941.

[1] Cyrus Wm. Rice & Co., Inc., Crafton, Pittsburgh, Pa.

possible, at least 0.035 cc. per liter for plants of this nature and the pH value for the feed water should be in excess of 9.

As a result of ascertaining these conditions, steps were immediately taken to correct them. From the standpoint of deaeration, more live steam was added to the deaerating heater, so that there would be a more uniform pressure and temperature which was accomplished by adding live steam under pressure control. In order to raise the pH value of the feed water, boiler water from all of the high-pressure boilers was returned into the feed water in order to hold the pH value between 8.5 and 9.0. This pH value was later increased to 9.0-9.5.

Six months later a 24-hour survey showed that the oxygen content was uniformly low during the entire period and that the temperature of the feed water fluctuated over considerably less limits than previously (Fig. 2, lower curve). These data were collected during a period of comparatively high load, because the heating system was in operation. Past records indicated that the temperature of the heater during the winter load period fluctuated over somewhat wider limits than during the summer load.

Figure 3, Curve 2, shows that the pH value of the feed water in the second survey was higher than in June, but the fluctuations were still too great. This was promptly corrected.

During the summer of 1934, when production was low, the steam load was so erratic that it was difficult to hold a uniform temperature in the feed water heater in spite of the pressure control system. Periodic analyses for oxygen in the feed water showed that the oxygen content increased beyond 0.05 cc. per liter, therefore, sodium sulphite was added to act as a scavenger for the oxygen that was not otherwise removed in the deaerating heater.

### Oil Removal

The corrosion in the oil-removal filters is caused as a result of excessive oxygen and low pH. In Fig. 1, in the flow cycle of feed water, the zeolite-treated make-up water and condensates are returned to the storage tank. The resultant temperature of this feed water is about 120 deg. F. With the oxygen content in this surge-tank water, which varies from 0.5 to 1.0 cc. per liter, and its pH value of 6.5-7.0, corrosive activity is almost at a maximum. Some of the condensates contain oil from the paper machines and it is necessary to remove this oil before the feed water enters the boiler.

The coagulant that was originally used was alum and sodium hydroxide. Later, it was found that the best chemicals to use for this purpose were a mixture of sodium hydroxide and sodium aluminate, to be fed from the alkali pot and the alum to be fed from the coagulation pot. The pH value maintained in the water entering the oil-removal filter is 6.3-6.6, which is satisfactory for flocculation because many checks that were made on the water leaving the oil filter have shown absence of oil. The corrosive activity is confined to the filter shell, particularly to the upper half of the shell, which action is more pronounced where the filtering sand terminates.

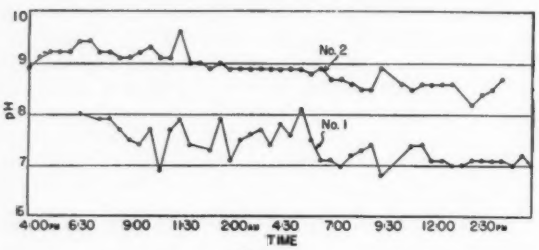



Fig. 3

**Heater Outlet Water—Curve 1, Tests of June 20-21, 1933; Curve 2, Tests of December 18-19, 1933**

Deaeration, of course, is impossible and the use of deoxidizing agents, such as sodium sulphite, would be uneconomical. Consideration, therefore, was given to ferrous iron salts. After repeated trials, it was found that the iron salt did not have a sufficient detention period for forming a ferric hydroxite floc, with the result that a considerable amount of colloidal ferric hydroxide passed through the sand filters and permitted the oil to pass through with it.

The use of ferrous sulphate would have been a satisfactory solution (1) because the oxygen in the water would have oxidized the ferrous ion to the ferric ion and thus reduced the oxygen attack on the filter shell; (2) because the flocculation of the iron can only be successfully accomplished at pH in excess of 8.5, which would have been conducive to reducing corrosion; (3) because the further addition of sulphate for maintaining the A.S.M.E. sulphate to alkalinity ratio would in all probability have been unnecessary; (4) because the amount of boiler water returned to the feed water to maintain the high pH in the feed water would have been reduced.

### Protective Coatings' Failure

Later, coating the inner surfaces of the oil filters with glyptol, a paint manufactured by the General Electric Co., and apexior paint, manufactured by the Dampney Company were tried. In each instance, the paint coating was short-lived. In the case of glyptol, the high concentration of alkali which is periodically applied to scour the filtering medium, caused the glyptol film to fail. The oil present in the water dissolved the apexior coating. Further trials of paint coatings were abandoned. Consideration was given to metal spray the inside surfaces of the filters with a noncorrosive metal, but the cost of preparing the surface and the length of time that a unit had to be out of service prohibited further trial. After 12 years' of service, leakage occurred as a result of pitting through the metal of the shell. The upper sheets were replaced with a thicker gage material and, based upon the experience of the initial plates, it is estimated that the probable life will be 15 to 20 years.

## Permutit Zeolite Softeners

In Table I, the analysis of the water from the river, sand filters, and zeolite treated, before regeneration, are given. It is evident that the river water is low in hardness and analyses of river water each month for a period of years prove that the fluctuation in this water is over narrow limits.

At the time of installing the Permutit zeolite softeners in 1927 it was deemed unnecessary to place sand filters ahead of the softeners to remove turbidity. The turbidity of the river water is seldom over 3 parts per million, but after operating the softeners a reasonable period, it was found that mud accumulated in the same. This mud was a mixture of algae and suspended matter from the river. The Permutit Company recognized at the time of installing this plant that the algae may affect the greensand and, consequently, a chemical pot was placed ahead of the

zeolites for the introduction of sodium silicate. The amount of sodium silicate fed was in the neighborhood of 5 to 7 parts per million. Apparently, the silicate prevented the algae from attacking the greensand or glauconite, but, as would be expected, the zeolite softener acted as a filtering agent for removing the algae and suspended matter in the water. The backwash water had to be increased in order to stir up the zeolite bed and loosen the mud depositions within the softener. In 1935, it was decided to put in sand filters ahead of the zeolites and to dispense with the sodium silicate. A few parts per million of alum and sodium carbonate are added to the water entering the sand filters in order to produce sufficient floc to assist the filters in removing the suspended matter and algae. Algae counts that were made of the water entering and leaving the sand filters indicated that the algae dropped from

TABLE I

| Analysis | River Water 116888 | Sand-Filtered Water 116889 | Zeolite-treated water before regeneration 116890 |
|---|---|---|---|
| | (Parts per million) | | |
| Temporary hardness, $CaCO_3$ | 18.8 | 15.0 | ... |
| Permanent hardness, $CaCO_3$ | 3.4 | 5.0 | ... |
| Phenolphthalein alkalinity, $CaCO_3$ | ... | ... | ... |
| Methyl orange alkalinity, $CaCO_3$ | 18.8 | 15.0 | 17.1 |
| Total dissolved solids | 35.3 | 35.3 | 44.7 |
| Suspended matter | 1.4 | 0.3 | 0.3 |
| Calcium bicarbonate, $CaCO_3$ | 16.0 | 12.6 | 1.3 |
| Magnesium bicarbonate, $MgCO_3$ | 2.4 | 2.0 | 1.7 |
| Sodium bicarbonate, $NaHCO_3$ | ... | ... | 23.0 |
| Calcium sulphate, $CaSO_4$ | ... | ... | ... |
| Magnesium sulphate, $MgSO_4$ | 4.2 | 6.0 | ... |
| Sodium sulphate, $Na_2SO_4$ | ... | 4.8 | 10.0 |
| Calcium chloride, $CaCl_2$ | ... | ... | ... |
| Magnesium chloride, $MgCl_2$ | .06 | ... | ... |
| Sodium chloride, NaCl | 8.4 | 6.8 | 6.8 |
| Silica, $SiO_2$ | 3.2 | 2.1 | 1.4 |
| Iron and alumina, $R_2O_3$ | 0.5 | 1.0 | 0.5 |
| pH | 7.0 | 6.9 | 7.0 |
| Permanganate consumed, $KMnO_4$ | 4.8 | 4.4 | 4.4 |
| Total hardness | 21.2 | 20.0 | 3.3 |

20 to 35 organisms per cc. to zero-2.0 organisms per cc.

As a result of the installation of these sand filters, the problem of mud depositions in the zeolite softener and the annoyance to the operators has been completely eliminated. An analysis of the sand filtered water is given in Table I.

After the sand filters were placed the sodium silicate was discontinued. In order to make sure that the remaining algae did not affect the zeolite mineral, samples of the zeolite were submitted to the Permutit Company every 3 to 4 months for a period of 1 year. Their reports indicated that the sand was normal and had no indications of any breakdown. Since that time further checks have been made of the sand and it has been established that, with the exception of the fineness increasing slightly, the sand was in good condition.

We were never "sold" on the sodium silicate addition because it may be responsible for the formation of silicate scale in the event that the pot-type proportioner did not function satisfactorily. Generally speaking, everyone was well satisfied to have it eliminated and to know that the zeolite mineral was not affected adversely.

The salt consumption during the period previous to the sand filter installation was in the neighborhood of 185 to 200 pounds per million pounds of water, whereas, the salt consumption should have been about 80. Immediately after installation of the sand filters, the salt consumption dropped to about 150 parts per million, and with more stringent control on the amount of brine used per regeneration, this salt consumption has been reduced to 130 parts per million. The cost of salt at this plant is $18.00 per ton, which is high as compared to other areas.

This year, it was found that a review of the salt consumption computed from several points did not coincide. For instance, on the basis of the salt that was delivered to the softening plant, the salt consumption was 121 parts per million and on the basis of the number of inches of brine, the salt consumption was 102 parts per million. Since a fraction of an inch of the saturator accounts for an appreciable quantity of salt, it was deemed advisable to place a measuring tank, for measuring the brine. The diameter of the measuring tank is small compared to its height, under which conditions, the operators can measure the requisite quantity of brine with little difficulty. With this measuring device, some savings in the salt bill should be made.

As a part of the program for the care of the zeolite softener, the following has been adopted (1) to "sound" each of the zeolite softeners; (2) to measure the distance between the lower lip of the manhole and the sand; (3) to ascertain whether the top of the sand is level; (4) to examine the brine distribution system; (5) to collect samples of the sand at different levels for laboratory check-up. Items 1 to 4 inclusive are carried out every 3 to 4 months and item 5 is carried out annually.

In reference to "sounding" the bed, this is accomplished by inserting a ¼-inch welding rod vertically through the zeolite sand bed and then measuring the distance the rod is immersed. These soundings are made about every 12 to 18 inches over the entire bed and a curve plotted or the depth indicated on a drawing specifically designed for this purpose. It may then be ascertained at a glance as to whether there are any "sand boils" in the zeolite bed. Unless the depth of the zeolite bed is uniform, the full capacity of the sand is not derived.

The resistance of the flow through the gravel is less than through the zeolite; if, therefore, the depth of the zeolite varies, the bulk of the water will flow through the area where the sand is the thinnest. This particular area will soon be exhausted and the water after that will not be soft. The number of gallons of water passed through the softener between each regeneration should be judged by the hardness of the effluent, which hardness under these conditions, will rise before the estimated number of gallons of water pass through the softener. This would then demand that the softener be regenerated prematurely and make the salt consumption rise. On the contrary, if the operators do not exercise the proper supervision, this high hardness will not be detected and hence hard water will enter the boilers.

In many plants which we contact, the importance of watching the salt consumption per unit amount of hardness is not appreciated; this increases the cost of salt per unit volume of water which reflects itself in increased treatment costs or steam costs. Glauconite, although a rather vigorous material, gives satisfactory life for many years, if it is handled properly. The care of the zeolite sand and softeners is therefore important. The importance of not overrunning the zeolite softener must not be overlooked, because hard water increases treating costs; increases blowdowns, and increases the possibility of scale. This is a part of the control at this plant, for, upon referring to the log sheets and monthly analyses of

composited zeolite treated waters, indicative of before regeneration, this hardness seldom goes above 6.0 parts per million. Referring to the analysis of the zeolite-treated water before regeneration, in Table I, a typical analysis is given.

The importance of properly rinsing the zeolite after brining is sometimes overlooked. This rinsing should be continued until the chlorite content of the outlet side of the zeolite, as compared to the chloride content of the inlet side, shows no greater difference than about 30 parts per million as NaCl.

Since the residual hardness must be treated with $PO_4$, it is important to keep the hardness to the lowest practical minimum. It is more economical to rinse the zeolite of the chlorides than to pass this water into the boiler, which will increase the boiler solids and/or cause excessive blowdowns.

In the supplemental treatment of the boiler water, sodium hydroxide, trisodium phosphate, sodium sulphite, and sodium sulphate are being applied. The NaOH is added to hold a pH value of 11.0 to 11.3 in the boiler water. The phosphate is being added to take care of the small amounts of hardness which the zeolite softener does not remove and to offset hardness that may be present as contamination in the condensate; the $PO_4$ is held between 25 and 50 parts per million. The sodium sulphite, as mentioned earlier, is to take care of residual amounts of oxygen not otherwise removed from the heater; the $Na_2SO_3$ concentration is held between 30 and 50 parts per million. The sodium sulphate is added to maintain a 3:1 sulphate to alkalinity ratio, as recommended by the A.S.M.E. Table II gives a typical analysis of the boiler water from the high-pressure boilers.

TABLE II.—BOILER BLOWDOWN WATER ANALYSIS

| Analysis | M. & O. Laboratory 132558 | Rice Laboratory 132870 |
|---|---|---|
| | (Parts per million) | |
| Phenolphthalein alkalinity, $CaCO_3$ | 290.0 | 270.0 |
| Methyl orange alkalinity, $CaCO_3$ | 480.0 | 410.0 |
| Sodium chloride, NaCl | 52.8 | 54.0 |
| Sodium sulphate, $Na_2SO_4$ | 1720.0 | 1675.0 |
| Phosphates, $PO_4$ | 35.0 | 25.0 |
| Sodium sulphite, $Na_2SO_3$ | 45.0 | ..... |
| Total solids | ..... | 2270.0 |
| Relation of sodium sulphate to alkalinity as calcium carbonate | ..... | 3.9 |
| pH | ..... | 11.3 |

Stringent efforts have been made to reduce the amount of contamination in the condensate, but in spite of all the control that can be exercised, occasionally some hard water valve is opened to cool the condensate line. This was common practice in the wall board department until, finally, a special soft water line was installed, so that the addition of hard water contamination could be entirely eliminated. Recently, it was found that the water from the paper machine carried some hardness and, after a careful search, it was found that hard water was being added to one of the condensate pumps from the heating system in one of the buildings that was supposed to be returning pure condensate. The rigid control employed at this plant soon found this and was immediately stopped.

## Conclusions

At this point, it is interesting to relate that after the sodium sulphite treatment had been used for a reasonable period of time, it was found that the actual amount of sodium sulphite was less than the oxygen present in the feed water demanded. After careful investigation, it was learned that the color in the original raw water, which is removed neither in the sand filters nor zeolite softener, was concentrated in the boiler and reacted adversely with the reagents of the sulphite test. Although a determination may be applied which will compensate for this organic matter, it is too cumbersome for control purposes and, consequently, a blank is being deducted from the sulphite determination which compensates for the organic matter.

It was mentioned above that a 3.0 to 1.0 sulphate to alkalinity ratio is being maintained at this plant. The boilers are riveted and shortly after their installation in 1927, some failures of the rivets were experienced. Recently, a caustic embrittlement detector as designed by W. C. Schroeder, Bureau of Mines, College Park, Maryland has been put into service. The information gathered will be of interest, but it is too early to discuss the same.

In reference to steam quality, it was mentioned earlier that the steam from the high-pressure boilers passes through turbines, at which points it is exhausted in the low pressure lines. The quality of the steam has been most satisfactory for turbine operation. Recently, an extensive check on carry-overs was made and it was found that, on the basis of conductivity, the solid content of steam from the high pressure boilers varied between 0.1 and 0.11 part per million. Many a central station wishes for a steam of this quality. This, of course, was determined after compensating for the conductivity due to the $CO_2$, which varied between 3 and 5 parts per million. Repeated inspections of the turbines have indicated that these machines are free of depositions and corrosion. Last summer, the large machine was opened after continuous operation of 3 years, and when the examination was completed, the casing was replaced without any repairs to the blading.

The importance of close control of the feed water cycle is recognized. For instance, the water from the sand filters and oil-removal system is checked every 2 hours for pH value. The pH at the economizer inlet is checked every 3 hours. The concentrations in the boilers are checked every 4 hours. The condensate from both the paper machine and wall board department is checked every 2 hours for alkalinity and hardness. A recording conductivity machine is located in the high-pressure steam line and twice a day the boiler water is checked for all of the constituents closely related to the feed water control.

No economizer tube failures have occurred since 1934. No water-wall tube failures or boiler tube failures have occurred since 1934. No active corrosion is now found in either the feed water line, economizer, or boilers. No deposition in any of the steam valves has been found. Turbines have been in service for 3 years without inspection and then when inspected the casings are replaced without any further repairs to the blading. This clearly shows what can be done in steam plants for industry when the operators and the management are thoroughly "sold" on the idea that it is better to stay out of trouble than to wait until trouble is at the front door.

## Acknowledgment

The information and data presented in this paper pertain to the International Falls, Minnesota Plant of the Minnesota and Ontario Paper Co.

We wish to thank J. H. Davidson for his permission in allowing us to present this paper and we wish to express our appreciation for his cooperation in the same.

# Theory and Practice of the Dilts-Cowles Hydrapulper*

By Edward M. Root[1] and Robert F. Vokes[1]


## Abstract

*The hydrapulper may be operated either batch or continuous as it relieves the beater from slushing stock prior to refining and replaces the breaker beater for preparing mixed waste paper stock. It is simple to operate because whole charges from 500 to 10,000 pounds may be furnished at once without plugging or damaging the equipment. Great savings in power, floor space, and maintenance are claimed along with such advantages as convenience, flexibility of operation, and more uniform stock preparation with a minimum of shrinkage losses.*

*Technical data covering both old and new style equipment is provided to clarify the theories and principles involved in its operation.*


To the Dutch, the most progressive of the old makers of paper, we must credit the invention of a most revolutionary piece of stock preparation equipment known as the Hollander beater. History records that they used to drive their beaters with the wind in the year 1750 A.D. and that the first beaters in America came in 1775. Since that time many improvements and changes of the beater have been proposed, none of which were fundamental, each attempting merely to overcome one or more of three objections to beater preparation of stuff for paper manufacture. These objections are: (1) prolonged furnishing and pulping, (2) power consumed for circulation, and (3) nonuniform stock preparation.

It has been our purpose in the past few years to give due recognition to each of the above mentioned frailties of beater operation, as well as to the natural tendency toward a solution of the problems. Our first move was to build and completely equip a laboratory designed for carrying on both sales service and development work. The laboratory has established itself as indispensable, and from the laboratory, we obtained all the technical data included in this paper.

Edwin Cowles, inventor of the classifiner, worked in close cooperation with our engineers and technicians to develop the Dilts-Cowles hydrapulper. The factors involved consisted of the following:

1. The pulper should be flexible as to capacity and speed and should be able to handle consistencies over a wide range, and it should be designed to operate either "batch" or "continuous".
2. The power requirements should be less than for the conventional methods and commensurate with the degree of defibering.
3. The pulper should be easy to furnish and simple to operate.
4. The pulper should be simple in construction, ruggedly built, and should lend itself to tile lining and corrosion-resistant construction where extreme cleanliness is necessary.
5. The pulper should be entirely free from any possibility of plugging to cause inconvenience, loss of production, and costly shutdowns.
6. The pulper should be easy to wash out for furnish or color changes and should be quick-dumping.
7. The pulper should be compact and easily installed.
8. The pulper must not cost in excess of existing competing equipment and be commensurate with the market prices of materials needed for construction.

## Hydrapulper

### Batch

A typical sectional elevation of a batch pulping unit as installed under ideal conditions for furnishing and dumping is shown in Fig. 1. The total charge of pulp may be furnished instantaneously from a conveniently located charging floor and the pulper may be dumped by gravity to a chest.

The hydrapulper is simply a cylindrical open-top tank with a dished bottom at the center of which is a heavy impeller designed to give a vortical circulation aided by directional vanes. The tank may be made of any suitable material and lined for extreme cleanliness. The impeller is usually made of stainless steel or cast iron with stainless steel pumping vanes. A hydraulically operated dump valve is of special design so that no lodgements can be accumulated at the discharge opening. Pulping may be carried on at any desired consistency and batches of from a few hundred pounds to as high as 10,000 pounds may be made down in the same unit, depending of course on the size.

### Continuous

The same unit employed for continuous operation is shown in Fig. 2 with certain other adaptations for the continuous removal of trash and rags. The features of the two units are identical with the exception of a perforated extractor plate, wiper blade and shroud. When clean stocks are to be furnished, only an extractor plate and wiper blade are required. For mixed waste furnishes as used for some paperboard filler stocks, a combination trash well-clarification tank, ragger, and some means of removing accumulated heavy trash is necessary.

A low consistency is used to give a pronounced vortical circulation, as created by the pumping and stationary vanes, to draw or suck whole bales of waste paper, complete with rags and binder wires, to the center of the impeller. One trip to the impeller rearranges the component parts of the bale so that

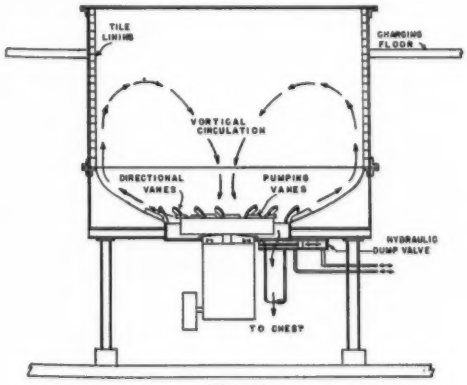



FIG. 1
Batch Hydrapulper

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Hotel Roosevelt, New York, N. Y., Feb. 17-20, 1941.

[1] Dilts Machine Works, Division Black-Clawson Co., Inc., Fulton, N. Y.

individual attention can be applied to three major classifications thereof. The first classification consists of rags, rope, strings, pieces of wood, etc., which are entwined with the baling wires by the vortical circulation of the mass. This natural rope formation may be started by dangling a barbed wire or rope in the pulper at the start-up. This entanglement may be gradually withdrawn from the tub over the ragger reel, continuously during the entire period of operation. No further reinforcement is required. The low density stock washes the rag rope almost free from fiber as it is twisted to about 50% moisture content upon withdrawal from the tub.

The second classification, consisting of heavy junk, is thrown to the outside of the tub and eventually settles through the low density stock by way of the trash boot into the trash well. From the trash well, the accumulated residue is removed either periodically by an overhung dredge or by a continuous junk remover similar to the Murphy type used on breaker beaters.

The third classification, consisting of papermaking fiber is separated according to the theory shown in Fig. 3 and extracted through a perforated plate kept clean by the hydraulic action aided by a wiper blade. Stock extracted in this manner is discharged to the suction of a pump and then to a tangential inlet classifiner. Accepted stock from the classifiner therefore has had two stages of screening and goes directly to a thickener elevated sufficiently to allow the white water to return by gravity to the trash well. White water washes the accumulated trash free from fiber as it is withdrawn.

The capacity of the system is regulated at the discharge of the thickener from which a portion of the stock may be returned to the Hydrapulper by gravity if the total capacity of the system is not required. Rejects, both light and heavy taken from the continuous centrifugal separation of the classifiner, are sent to the combined trash well and clarification tank. Light rejects are usually withdrawn continuously and enter the clarification tank tangentially so that a swirling condition is set up. Heavy rejects are withdrawn periodically through a time-operated valve and are directed by a baffle in such a manner as to direct heavy particles to the bottom of the trash well. All fibers entrained with rejects are carried back into the pulper tank with the continuous flow of makeup and white waters via the trash boot. A shower on the trash boot aids in the clarification of settling trash.

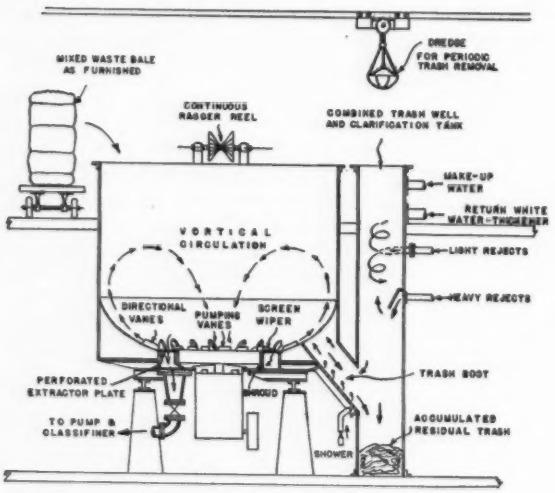



FIG. 2
Continuous Hydrapulper

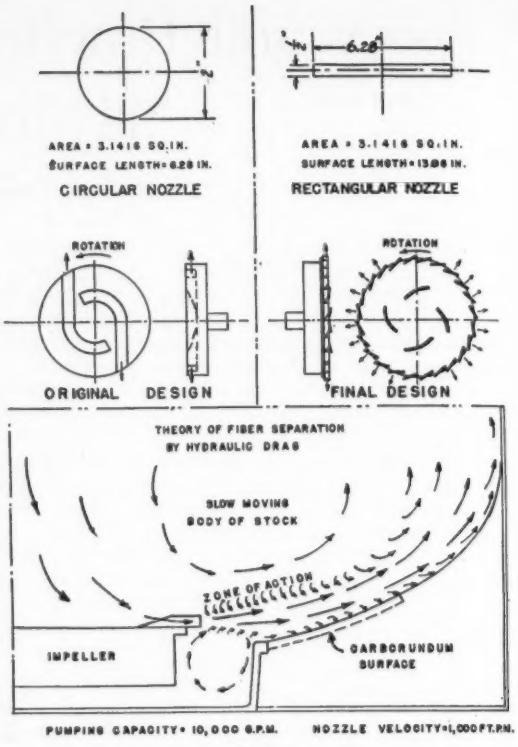



FIG. 3
Evolution of Impeller Design and Theory of Fiber Separation

## Evolution of the Hydrapulper

Cowles' idea of the hydrapulper was conceived about ten years ago when he invented a domestic washing machine which was a failure because of its drastic action on the clothes being washed. This venture was not without its compensations for out of it came the basic principle of hydrapulper operation in paper mills, a principle based on a combination of hydraulic and mechanical work on the stock being pulped. Four distinct problems presented themselves: (1) circulation, (2) submerging and breaking, (3) defibering, (4) trash elimination (in the case of handling dirty stocks). The first method employed for stock reduction was covered by a patent issued in October, 1932, in which the stock was circulated by a pump from a vat and returned to the vat at high velocity through submerged nozzles. Upon withdrawal from the vat the stock was taken to the pump through a screen and was directed back into the vat through the nozzles in such a way that the high velocity stream was played along the surface of the screen, thereby keeping the screen from clogging.

## Theory of Fiber Separation and Impeller Design

In Fig. 3, the evolution of the impeller design is shown. In utilizing the principle of high-velocity discharge, the desired defibering effect takes place along

the surfaces of the body of stock moving at high velocity through the body of relatively slow-moving stock in the vat. Along these surfaces there is a great differential in velocity. Thus, if the stock is discharged from a nozzle having a circular aperture, the defibering action occurs along a conical surface, but the stock within the cone receives little or no work on it since it moves along until its energy is spent without being subjected to the defibering action which occurs at the surface of the cone.

The surface area of a jet of stock discharged from a circular nozzle may be increased by changing the shape of the aperture. The surface length of a rectangular nozzle is much greater than that of a circular nozzle of the same area, but the solid components of the stock tend to clog such elongated and completely enclosed apertures, and they cannot be used successfully in practice. Accordingly, to eliminate both of these faults, an open impeller was mounted in the bottom of an open tank. Advantage was taken of the elongated nozzle to magnify the zone of action desired.

All pumping and circulation takes place within the open tank itself and by mounting a multiplicity of vanes on the surface of the open impeller, stock is discharged at high velocity around the entire periphery of the impeller in the form of a thin annular disk. The surface area of the discharged disk of stock is great and consequently the defibering effect is rapid and efficient. This purely hydraulic action is combined with a mechanical action brought about by the vigorous whipping action imparted to whole bales of stock as they contact the impeller and become separated without clogging or wedging in any way.

Two distinct pulping actions take place simultaneously in the hydrapulper: (1) A vigorous tearing action on the bales of pulp or paper by the inner and outer vanes of the impeller tending to separate the individual sheets and expose them to the next action. (2) (a) Fiber separation by hydraulic drag

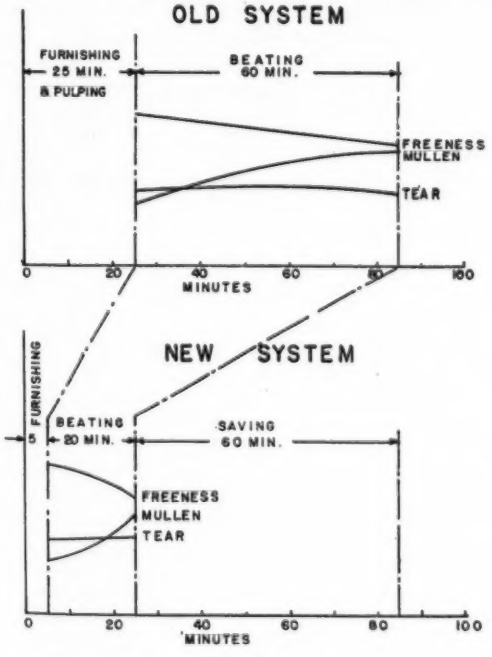



FIG. 4

**Beating Cycle as Affected by Hydrapulper Application on Filler Stock**

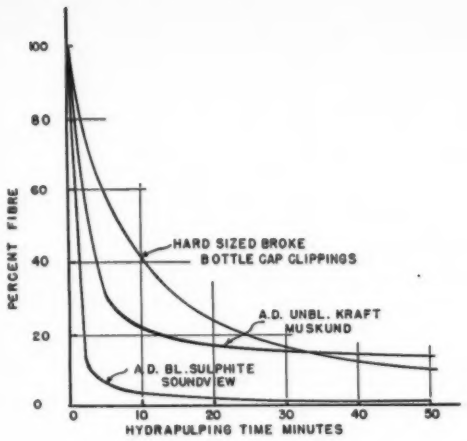



FIG. 5

**Hydrapulping Efficiency—Fiber Retention on 10-Mesh Wire**

as set up by the difference in speed between the stock nozzled at high velocity from the impeller and the relatively slow-moving body of stock in the tub; and (b) fiber separation by the continuous stapling and sliding off of fibers and fiber bundles on the advancing edges of the pumping vanes.

Assume that stock is being nozzled from the impeller vanes at a speed of 1000 feet per minute; actually this speed is considerably higher in most cases. If we have an impeller, 5 feet in diameter, rotating at 250 revolutions per minute, it takes about 1 second for a bale of pulp to pass from the center of the impeller to the outside. If contact is made with the impeller by one edge of the bale, the bale receives 125 impacts from the impelling vanes. If a 3-foot wide contact is made by one side of the bale in this same second, 550 impacts are delivered, resulting in a vigorous tearing action.

Hydraulic drag and pumping capacity can be appreciated by computing the displacement of the impelling vanes. A 5-foot diameter impeller rotating at a speed of 250 revolutions per minute will nozzle in the order of 10,000 gallons per minute of stock at a speed of 1000 feet per minute into the relatively slow moving body of stock in the tub. Action by continuous stapling is the fastest of all since the stapling and sliding off is done on an inclined advancing edge. Under the same conditions as above, a fiber staples and slides off of one advancing edge in 1/220 second.

### Operating Characteristics

Figure 4 shows a comparison between a beater system in which both pulping and beating are carried out in the beaters; and the same system except that the preliminary pulping is done in the hydrapulper with the final beating done in the beater. The stock in this case was for use in making filler for solid white paperboard in a high-grade paperboard mill. Furnishing and slushing in the beater required 25 minutes under previous conditions; while the hydrapulper furnishing took 5 minutes, the time necessary to fill the beater with a stock pump leading directly from the hydrapulper to the beater. Under the old setup it was necessary to beat for 60 minutes with the roll down, while following the hydrapulper it was necessary to beat for 20 minutes with the roll down. In each case freeness, tear, and burst (mullen)

TABLE I.—BATCH PREPARATION OF FILLER STOCK

(Furnish: 50% bleached sulphite pulp and 50% hard white cuttings)

Old Method

| Operation | Equipment | Quantity lb. | Time min. | Power hp. | Hp./ton /day | Freeness cc. | Burst % | Tear |
|---|---|---|---|---|---|---|---|---|
| Pulping | 2 Beaters | 2400 | 25 | 90 | 1.30 | 672 | 26.3 | 1.53 |
| Beating | 2 Beaters | 2400 | 60 | 120 | 4.17 | 570 | 47.0 | 1.67 |
| Total hp. per ton per day = ..... | | | | | 5.47 | | | |
| New Method | | | | | | | | |
| Pulping | 14 ft. diam. Pulper | 2400 | 10 | 65 | 0.37 | 652 | 24.4 | 1.6 |
| Beating | 2 Beaters | 2400 | 20 | 120 | 1.39 | 527 | 43.9 | 1.9 |
| Total hp. per ton per day = ..... | | | | | 1.76 | | | |

TABLE II.—BATCH PREPARATION OF LINER STOCK

(Furnish: ⅓ aspen sulphite pulp and ⅔ spruce sulphite pulp)

Old Method

| Operation | Equipment | Quantity lb. | Time min. | Power hp. | Hp./ton/day |
|---|---|---|---|---|---|
| Pulping | 2 Beaters | 2400 | 15 | 45 | 0.78 |
| Beating | 2 Beaters | 2400 | 45 | 120 | 3.12 |
| Total hp. per ton per day = ..... | | | | | 3.90 |
| New Method | | | | | |
| Pulping | 14 ft. Diam. Pulper | 2400 | 10 | 65 | 0.37 |
| Beating | 2 Beaters | 2400 | 20 | 120 | 1.39 |
| Total hp. per day per ton = ..... | | | | | 1.76 |

values are very nearly the same at the beginning of the beating time, and at the end of the beating time they have dropped to closely corresponding values. The only difference is in the amount of time needed to bring about the necessary degree of preparation. Jordaning changed the characteristics the same amount in each case in order to ready the stock for the paper machine, and while it does not show on this chart, the jordan power demand was the same. Table I shows batch preparation of filler stock by the old beater method and by the hydrapulper method using a beater to finish off the stock in the latter case. Under the old method two beaters were used and required 1.30 hp. per ton per day for slushing and 4.17 hp. per ton per day for beating. Under the new method the hydrapulper required 0.37 hp. per ton per day and additional beating required 1.39 hp. per ton per day on the same tonnage demand. The total power requirements were 5.47 hp. per ton per day by the old method and 1.76 hp. per ton per day by the new method. Strength characteristics of the final stock dropped from the beaters agreed within the limits of experimental error.

A comparison of liner stock preparation is given in Table II. Two beaters were necessary under the old setup and they required 0.78 hp. per ton per day for pulping and 3.12 hp. per ton per day for

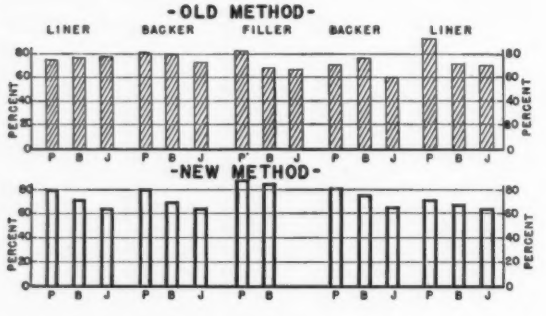



FIG. 6

Board Stock Preparation Uniformity as Shown by Fiber Fractionation. Each Bar = Total Retention on 65-Mesh Wire

| | Operation | Equipment: Old Method | Equipment: New Method |
|---|---|---|---|
| P | Pulping | Beater | Hydrapulper |
| B | Beating | Beater | Beater |
| J | Jordaning | Jordan | Jordan |

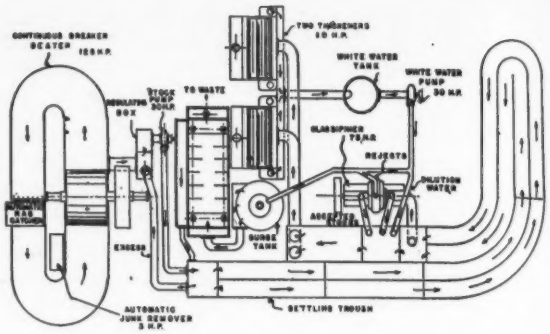



FIG. 7

Old-Style Waste Paper System—100-Ton Capacity. Total Power = 278 hp. = 2.78 hp./Ton

beating, or a total of 3.9 hp. per ton per day in beater preparation. Under the hydrapulper-beater setup the pulper required 0.37 hp. per ton per day and the one necessary beater required 1.39 hp. per ton per day on the same tonnage, a total of 1.76 hp. per ton per day. Although strength tests are not shown here, they were of corresponding value since the stock would be beaten to the same end point.

This installation resulted in two more advantages to the paper mill, (1) production of the paper machine was increased 20%, a result heretofore impossible because of the bottle-neck in the beater room, and (2) sizing was greatly improved because of the thorough mixing and dispersion of size in the pulper.

A means of comparison between the hydrapulper and other existing types of pulpers is given in Table III, on the same size of batches and the same kind of stock. The hydrapulper required 0.34 hp. per ton per day as against 1.08 hp. per ton per day for the other pulper.

## Installation Factors

In engineering a hydrapulper installation, the type of stock to be pulped, the tonnage to be handled per day, and the degree of defibering necessary must be determined. These factors enter into the selection of the size of the pulper, the power to be applied, and the time for which a charge of pulp must be treated. Figure 5 shows hydrapulping efficiency for three types of stock. The bleached sulphite required 5 minutes for the stock to be brought down to the point where only about 5% of the fibers would be retained on a 10-mesh wire using the McNett classifier. After this time the defibering leveled off indicating that further time in the pulper was impractical because additional defibering would be only at the expense of power. In the case of the kraft pulp

TABLE III.—COMPARATIVE PULPER PERFORMANCE

| Subject | Other Pulper | Hydrapulper |
|---|---|---|
| Furnish ..... | Bleached sulphite and soda pulps | Same |
| Batch size, lb..... | 3000 | 3000 |
| Water to tub, min..... | 2 | 2 |
| Charging ..... | 10 min. (300-400 lb./min.) | Instantaneous |
| Additional pulping, min..... | 3 | 5 total pulping |
| Consistency, %..... | 6-8 | 6-8 |
| Dumping, min..... | 5 | 2 |
| Wash down, min..... | 5 | 3 |
| Total time cycle, min..... | 25 | 12 |
| Power data: | | |
| Peak, hp..... | 120 | 68 |
| Drop to, hp..... | 90 | |
| Drop to, hp..... | 70 | 52 |
| Ave., hp..... | 93 | 62 |
| Capacity, tons/day..... | 86.5 | 180 |
| Horsepower/ton ..... | 1.08 | 0.34 |

10 minutes time brought the pulp to a point where about 20% was retained on the 10-mesh wire. In the case of the hard-sized broke and bottle cap clippings, the point of leveling off is less pronounced but 25 minutes might be a suitable point at which to stop pulping. At this point, the retention is about 20%. These curves are representative of the softest and hardest type of pulping and the slope of each may be changed by regulating such factors as impeller diameter, depth of impeller vanes, and speed. However, to make the curves drop more rapidly and level out requires more power, therefore each job is engineered to pulp the stock in the most economical way. The value at which each of the curves shown here levels off represents the amount of fibers which must be carried over to the refining equipment for complete separation and for strength development. After the curve reaches the point where it flattens out, it is uneconomical to hydrapulp further. It is desirable to dump the batch at the break in the curve and take it to a piece of equipment designed for the purpose of refining.

### Strength Development

No claims are made for any refining action in the hydrapulper. This has been investigated in tests on all types of stock in which strength increase and freeness drop were plotted against pulping time. Although tests were carried out for as long as 5-hour periods, freeness dropped little and strength increased slightly. Fiber fractionation indicated no cutting of the fibers. The increase in strength and drop in freeness that did result was considered to be due simply to soaking and natural wetting. After pulping in the hydrapulper, less time is usually required by the refining engine than would otherwise be the case, but this is attributed to the fact that the pulp goes to the refining engine with the fibrages much more reduced and therefore refining can proceed at once without the necessity of first completing the pulping operation. It seems that, due to the vigorous hydraulic action on the stock in the pulper, the fibers are more susceptible to treatment in the next stage of preparation.

### Uniform Stock Preparation

Figure 6 shows cumulative fiber percentages retained on the 65-mesh screen under the beater method and under the hydrapulper method in conjunction with the beater for preparing stock. The preparation is more uniform in the latter case. The fiber retention decreases gradually from the pulper through the jordan in every instance, whereas fiber retention under the old method is apt to show up either way as subsequent steps in the preparation are carried out. This uniformity with the hydrapulper system is due to the fact that charging of the entire batch can be instantaneous with the result that every fiber receives treatment for the same length of time. The stock leaving the hydrapulper is a homogeneous mass and is treated as such in subsequent operations. This makes it easier for the equipment following the pulping operation to work uniformly on the stock.

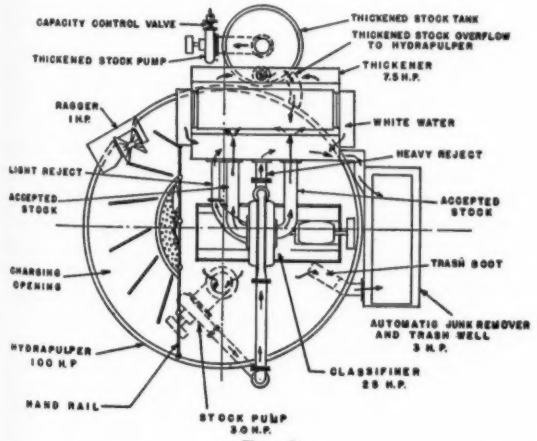



FIG. 8

New Style Waste Paper System—100-Ton Capacity. Total Power = 166.5 hp. = 1.67 hp./Ton

### New System vs. Old

WASTE PAPER SYSTEM

The equipment and installation cost is considerably lower, because the hydrapulper system requires less equipment to do the same work as old systems.

Less floor space is required, a space 30 by 30 feet being ample to accommodate a complete pulping and cleaning system.

An old-style system set up to produce 100 tons per day of filler stock for a paperboard mill using mixed waste papers is shown in Fig. 7. A 100-ton hydrapulper system is shown in Fig. 8. The old-style system requires a total of 278 hp. while the hydrapulper system requires 166.5 hp. Power consumed by the rag catcher in an old-style system was not considered because this was an intermittent load, usually about 3 hp. when the rag catcher was in use. Ragging under an old system was a nasty job requiring the operator to stop furnishing and allow his beater to thin down in order that he might "rag out" without losing too much fiber. Nevertheless, a considerable amount of fiber was lost in this operation. Following the ragging operation the operator had to push his equipment at an increased rate of production in order to make up the time lost through ragging. In a hydrapulper system the ragger consumes 1 hp. and runs continually. Pulping is carried on at a reduced consistency and the rags are washed free of fiber as the rope of rags is withdrawn from the tub without requiring the operator's attention. Rags are not allowed to accumulate in the pulper tub and pulping can be carried out at a uniform rate thus bringing about a better balance among the various items of equipment.

Two thickeners were used in our old system because proper settling trough consistency of 1% made necessary the handling of large volumes of water. Now, however, consistency is unchanged between the hydrapulper and the thickener, and, since normal consistency is about 1.75%, less thickening capacity is required. No white water pump is required in the new setup because the thickener is located above the pulper tank allowing white water to flow by gravity back to the combination trash well and junk remover. No surge tank and flat screens are required in the new system because the classifiner rejects are clarified in the trash well from which reclaimed fibers pass back to the pulper tub and are thus returned to the system. A new design of tangential inlet in the classifiner permits a reduction of power and enables the classifiner to handle a larger tonnage than formerly without impairing its ability as a screening element. The screening action is improved with the

TABLE IV.—COMPARATIVE SHRINKAGE

| Number | Rejected from | Shrinkage, lb./ton/day | Shrinkage, % |
|---|---|---|---|
| | **Old Method** | | |
| 1 | Bales | 12.7 | 0.635 |
| 2 | Breaker beater | 14.3 | 0.715 |
| 3 | Settling trough | 10.1 | 0.505 |
| 4 | Surge tank | 3.1 | 0.160 |
| 5 | Detrasher | 6.7 | 0.335 |
| | Total | 46.9 | 2.35 |
| | **New Method** | | |
| 1 | Hydrapulper-junk remover | 16.6 | 0.83 |
| 2 | Rag Rope | 22.0 | 1.10 |
| | Total | 38.6 | 1.93 |

Rag Rope Analysis

| Material | By Wt., % |
|---|---|
| Rag-Hemp | 63.80 |
| Wire | 32.19 |
| Paper fiber | 1.82 |
| Rubber | 0.95 |
| Cellophane | 0.64 |
| Wood | 0.60 |

Total loss of papermaking fiber = 1 lb. per ton of furnish

more efficient centrifugal separation obtained using a tangential inlet.

### Shrinkage

A comparison between old-style systems and the hydrapulper (Table IV) shows a total shinkage of 2.35% for the old system and 1.93% for the hydrapulper system. The larger shrinkage in the old system resulted because there are several points in the system where good fiber can be lost. Fiber is lost in the settling trough due to heavy undefibered bits of paper settling to the bottom or becoming trapped by settling junk. It is impossible to give the amount without a careful analysis of the total precipitate at the end of a week's run. Then, too, some fiber is lost in the surge tank in the form of undefibered bits of paper which become entrained with both floating and settling rejects. Considerable fiber is lost in the ragging operation. Rejects from bales, breaker beater, settling trough, surge tank, rag catcher, and flat screen constitute six points in the old system at which junk is disposed of. In the hydrapulper system all junk is concentrated for removal at two points, the junk remover and the ragger. Little fiber is lost in the junk remover because the returning white water and make-up water pass to the pulper tub through the junk chute, and thus the junk settling out into the trash well is continually washed free of fiber. The rags are washed free of fiber as they are withdrawn from the tub. This is shown in the analysis of the rag rope (Table IV). Paper fiber constituted 1.82% by weight of moisture-free rag rope and since the rag rope amounted to 1.19% of the total furnish over a day's run, the total fiber loss amounted to 0.02%, which is almost negligible when it is considered that only one pound of paper out of every ton of furnish is sacrificed to obtain a better prepared stock.

## TAPPI Notes

The Empire State Section of the Technical Association of the Pulp and Paper Industry will meet at the General Brock Hotel, Niagara Falls, Ont., on May 16-17, 1941. This will be a joint meeting with the Niagara Peninsular Chapter of the C. P. P. A. Technical Section and the New York-Canadian Division of the Superintendents Association.

J. L. McCarthy, formerly of McGill University, is now in the research department of the Fraser Companies, Ltd., Campbellton, N. B.

R. H. Stevens, formerly of the Chatham Process Company and the Bogalusa Paper Company is now with the National Container Company, Jacksonville, Fla.

Vincent J. Tranfaglia is now a Lieutenant, Co. 5, Officers Training School, Fort Benning, Ga.

John F. Carroll, formerly superintendent of the Ohio Wax Paper Company, is now superintendent of the Franklin Paper Company, Holyoke, Mass.

T. M. Chemerys, formerly of the Champion Paper and Fibre Company is now chemist for the Riegel Paper Corporation, Milford, N. J.

W. F. Connolly, formerly of the National Paper Products Company, is now in the research department of Johns-Manville Company, Manville, N. J.

Members of TAPPI wishing to serve on any association committee should write to the secretary as soon as possible.

There are a few copies of the Symposium on Spectrophotometry in the Pulp and Paper Industries available at one dollar per copy at the TAPPI headquarters, 122 East 42nd Street, New York, N. Y.

Because of the increasing need for a training program in the industry there have been a number of requests for Bulletin 168 on "Vocational Training for the Pulp and Paper Industry." This is a job analysis with suggestions on the organization and operation of training programs which was published in 1933 for the Technical Association of the Pulp and Paper Industry by the Federal Board of Vocational Education. It is a timely book and may be obtained from the TAPPI office at 30 cents per copy. Please remit with the order.

## R. M. Cooper Goes to Powell River

[FROM OUR REGULAR CORRESPONDENT]

VANCOUVER, B. C., March 29, 1941—Russell M. Cooper has arrived at Powell River, B. C., to take over the duties of superintendent of mills in the Powell River Company. Mr. Cooper succeeds Grant M. Fowler who passed away recently.

A native of Montreal, P. Q., Mr. Cooper attended McGill University, serving overseas after his graduation when he joined the 5th Canadian Pioneers. In France he was with the 12th Canadian Engineers. Barely into his forties, he brings a splendid record of success in the paper industry to his new position, having entered the trade as a pulp tester after the war at the Grand Mere mills of the Laurentide Paper Company. There he worked up through the papermaking department on the machines, and was subsequently appointed assistant paper mill superintendent in that mill. After serving at the Port Arthur mills as superintendent, he rose to general superintendent in 1936. Later Mr. Cooper joined the Ontario Paper Company and was in charge of its mill at Baie Comeau when it opened. The company later became known as the Quebec-North Shore Paper Company.

## Correction to "Air Cleaning Methods"

In the article "Air Cleaning Methods" by R. E. Chase, *Paper Trade Journal* III, no. 21:31 (Nov. 21, 1940) the A.S.H.V.E. standard code dust is not Cottrell precipitate but is an 80-20 mixture of Pocohontas ash and carbon black.

# Imports of Paper and Paper Making Stock

## Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard; Bleached Sulphite More Acute—Some Grades of Old Waste Lower.

**Effective September 30, 1939, under Treasury Decision 49,970, all publications ,exchanges and trade associations, were denied access to import manifests at the New York Customs House. The Paper Trade Journal and other interested parties have vigorously protested this ruling, and as soon as the order of the Treasury Department is modified or rescinded, full publication of all manifests will be resumed in these columns. In the interim, the Paper Trade Journal is making every possible effort to gather all available information from manifests, at various outside sources.**

### NEW YORK IMPORTS

WEEK ENDING MARCH 29, 1941

SUMMARY

Cigarette paper....60 cs.
Wall paper....3 bls.
Newsprint....8,386 rolls
Filter paper....15 cs.
Photo paper....27 cs.
Decalcomania paper....74 cs.
Tissue paper....5 cs.
Tracing cloth....19 cs.
Miscellaneous paper....56 cs.

CIGARETTE PAPER

E. F. Pipe & Co., ——, Barcelona, 20 cs.
——, ——, Barcelona, 40 cs.

WALL PAPER

W. H. S. Lloyd & Co., ——, Liverpool, 3 bls.

NEWSPRINT

——, ——, Pt au Basques, 5,291 rolls.
——, ——, Liverpool, N. S., 3.095 rolls.

FILTER PAPER

H. Reeve Angel & Co., Inc., ——, Liverpool, 15 cs.

PHOTO PAPER

——, ——, Liverpool, 27 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., ——, Liverpool, 67 cs. (duplex), 1 cs. (simplex).
——, ——, Liverpool, 6 cs.

TISSUE PAPER

B. F. Drakenfeld & Co., ——, Liverpool, 5 cs.

TRACING CLOTH

——, ——, Liverpool, 19 cs.

MISCELLANEOUS PAPER

National City Bank, ——, Kobe, 49 cs.
——, ——, Kobe, 6 cs.
Mitsui & Co., Ltd., ——, Nagoya, 1 cs.

RAGS, BAGGINGS, ETC.

——, ——, Shanghai, 137 bls. cotton waste.
——, ——, Liverpool, 218 bls. rags.
R. & V. Miller, Inc., ——, Liverpool, 7 bls. rags.
National City Bank, ——, Liverpool, 19 bls. rags.
——, ——, Liverpool, 125 bls. rags.
Dominion Bank, ——, Santos, 40 bls. thread waste.
——, ——, Santos, 21 bls. thread waste.
——, ——, Buenos Aires, 21 bls. rags.
Tradesmans Natl. Bank Trust Co., ——, Buenos Aires, 1,303 bls. cotton linters.

CASEIN

C. W. Burckhalter, Inc., ——, Buenos Aires, 417 bags.
A. Hurst & Co., ——, Buenos Aires, 751 bags.

GLUE STOCK

——, ——, Havana, 10 pkgs.

HIDE FLESHINGS

Peter Cooper Corp., ——, Calcutta, 254 pkgs.

### BOSTON IMPORTS

WEEK ENDING MARCH 29, 1941

Elliott Addressing Machine Co., ——, Yokohama, 11 cs. paper.

### LOS ANGELES IMPORTS

WEEK ENDING MARCH 29, 1941

——, ——, Powell River, 1,175 pkgs. newsprint, 115 pkgs. paper stock, 467 bls. chemical pulp, 90 tons.
——, ——, Sao Paula, 438 bls. cotton linters.
——, ——, Santos, 101 bls. cotton linters.
——, ——, Tokyo, 1 cs. writing paper.
——, ——, Kobe, 3 cs. rice paper.
——, ——, Shanghai, 1,146 bls. rags.

## J. C. Rosemait to be Chief Engineer

J. C. Rosemait has been appointed chief engineer of the Valley Iron Works Company, builders of machinery for paper and pulp mills, Appleton, Wis. Mr. Rosemait received his early training by serving as apprentice in shop and drafting room and studied mechanical engineering at Rheude School of Engineering in Milwaukee. He has had 29 years' engineering experience, twelve years of which were spent with corporations in design and manufacture and in the heavy machine industries, such as hydraulic turbines and control governors, centrifugal pumps and irrigation plants, where he designed some of the largest centrifugal pumping units used in the irrigation districts of the South and South West, and numerous water wheel installations in Wisconsin and Michigan up to 1920. For the next seventeen consecutive years he was occupied in plant and maintenance engineering in pulp and paper mills in the Middle-West, Canada and New England Mills. For nearly ten years he was connected with one of the large Wisconsin mills as staff engineer after which he spent a number of years in New York City as chief engineer of one of the largest paper, pulp and power companies with mills in the United States and Canada. In this connection he was also active in engineering and equipping with converting machinery some of the kraft bag plants in the Southern states.

Mr. Rosemait, who is a member of the A. S. M. E. and Society of American Military Engineers, will move to Appleton from his home city of Milwaukee, where for the past four years he was connected, as secretary and chief engineer, with a machinery builder specializing in high productive, pneumatic and hydraulic equipment for automotive foundries and the large farm implement producers.

# New York Paper and Pulp Market Review

## Strong Demand For Many Grades of Paper Continues—Pulp Market Active With Government Expecting Adequate Supply For This Year—Roofing Rags Active—Lower Grades of Paper Stock Strong.

Office of the PAPER TRADE JOURNAL,
Wednesday, April 2, 1941.

Demand for many grades of paper continues at a high level, according to reports received from many manufacturers' representatives, jobbers, and general paper merchants this week. No shortage in the supply of wood pulp or restriction of the production of paper is expected and consumers should experience no difficulty in obtaining all the paper they may require.

The index of general business activity for the week ended March 23 remains unchanged at 122.1%, compared with 99.4% for the like period last year.

Paper production for the week ended March 23 was estimated at 91.8%, compared with 85.0% for 1940, with 82.8% for 1939, with 68.5% for 1938, and with 91.1% for the corresponding week for 1937.

Paper board production for the week ended March 23 was 82.0%, compared with 70.0% for 1940, with 73.0% for 1939, with 62.0% for 1938, and with 88.0% for the corresponding week for 1937.

Newsprint production and shipments continue their uptrend. Domestic mills produced 3,263 tons more, an increase of 2% in the first two months of this year, than during 1940; Canada produced 24,940 tons more, an increase of 5% over the like period last year. Total U. S. production for February, 1941, was 79,720 tons; Canadian production, 245,607 tons; Newfoundland production, 27,815 tons.

Consumer demand for a wide range of papers and paper products is reported at a high level, with a large number of mills operating at capacity. Although prices in general are fairly firm, it is not expected in the trade that any important revision from prevailing market quotations will be effective in establishing a higher price level at this time. The keen competition existing in the paper industry today, as in the past, does not encourage any price change at this time, despite the general opinion held in the industry that the current price level is too low. With few exceptions, the price level of most goods, other than paper, is also low, when a comparison is made with the total costs of production.

Kraft paper production and shipments continue at a high level, with orders exceeding capacity by a substantial margin. Prices are unchanged.

### Mechanical Pulp

Demand for mechanical pulp continues active. Production is at a high level in many mills. Prices are firm and continue unchanged at prevailing representative quoted market prices.

### Chemical Pulp

The chemical pulp market continues active with prices unchanged. A report just issued by the Department of Commerce states that expanding domestic and Canadian production is adequate to provide for domestic and export requirements for 1941. The margin of safety on unbleached sulphite, however, is slight and any further increase in demand by domestic mills would tend to create a most acute situation in this grade of pulp. Prices are firm and unchanged.

### Rags

Mill buying of rags is reported moderate at this date, with some quarters of the trade reporting a slightly broader demand for a few grades. The demand for roofing rags continues active. No important change from prevailing market quotations has been reported this week on any grade of new or old rags.

### Old Rope and Bagging

No important change in the old rope market has been reported during the current week. Mill buying continues steady to absorb available supplies of Manila rope at prevailing prices.

### Old Waste Paper

The lower grades of paper stock are firm and the market position of these grades is strong under an active demand. Although some quarters of the trade expect an upward revision in prices on grades in most active demand, only one important price change has been reported at this date. Strictly overissue news has advanced and is currently quoted at from .90 to $1.00.

### Twine

Twine prices continue firm. The market is quite strong on most standard grades. Prices conform to the recent upward revision and the trade outlook is good.

## Paper Cargo Lost

With the torpedoing of the Finnish steamer *Carolina Thorden*, a press report states that some 1500 tons of newsprint and a large quantity of kraft paper was lost. The ship went down off the Faroe Islands last week and was en route to New York from Petsamo with a miscellaneous cargo. The vessel was supposed to have been assured of safe conduct through the zone of conflict and its loss is the subject of speculation in the trade whether future shipments of wood pulp and paper can be made from Petsamo, the only port open for shipments from Finland to this country.

## Bradford Paper Sales Co. Starts

[FROM OUR REGULAR CORRESPONDENT]

HAVERHILL, Mass., March 31, 1941—The Bradford Paper Sales Company, of which Laurette Corvitt and John Gianopoulos are the owners, has started in the paper jobbing business at 45 Wingate street. Both partners are thoroughly versed in the paper and specialty business, having had many years of practical experience. They plan to carry a large stock so as to serve their many customers promptly. Their many friends wish them the success they deserve.

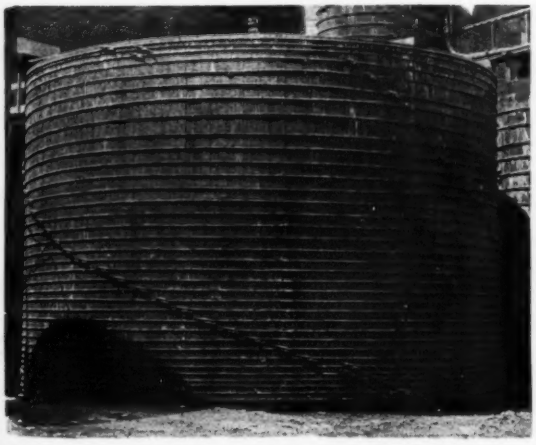
# FOR OVER HALF A CENTURY .....

***KALAMAZOO HAS SPECIALIZED IN PAPER MILL TANKS***

**As a pioneer in paper mill tanks, we developed the Glazed Tile Tank which has received almost universal acceptance. More than 1,000 successful installations stand as proof of their cleanliness, long life and economy.**

**Here are shown three of approximately thirty tile tanks at the Kalamazoo Vegetable Parchment Company.**

***WOOD TANKS, ACID TANKS, BLOW PITS***



**If you have a tank problem, why not let the long experience of our engineering staff guide you to the right answer.**

*Kalamazoo*

**TANK AND SILO COMPANY**

**KALAMAZOO, MICHIGAN**

***Established 1867***



# No More Blow-Off Troubles

**Fig. 0852, 6" 250 lbs. steam pressure**

**On sulphate digester blow-off service, Fairbanks Cast Steel Valves with stainless steel ball and Ni-Resist seat rings are so resistant to wear that they have been in scores of paper mills for years without any replacement parts being needed.**

**Fairbanks Sphero Valves are *different*. Instead of a wedge or disc, there is a *revolving ball plug*. When open this plug gives an opening the same size as that in the pipe. That eliminates frictional resistance to steam flow.**

**There is nothing on which scale and foreign matter can accumulate. The shearing action of closing the plug cuts through any foreign matter or thick viscous materials. An absolutely tight seal is assured.**

**Seating surfaces can be renewed without removing valve from the pipe line.**

**Another difference in Sphero is that a quarter turn of the lever handle opens or closes it "as quick as a wink".**

**Write for Bulletin V-103.**

## THE FAIRBANKS CO.

**399 Lafayette St., New York, N. Y.**

**Boston, Pittsburgh—Distributors in Principal Cities**

**Factories: Binghamton, N. Y., Rome, Ga.**

**Fairbanks Sphero Valves**

# MISCELLANEOUS MARKETS

Office of the PAPER TRADE JOURNAL.
Wednesday, April 2, 1941.

BLANC FIXE—Quotations on blanc fixe are firm and continue unchanged at prevailing market levels. Demand reported steady for the week. The pulp is currently quoted at $35 per ton, in barrels, at works; the powder is offered at $50 per ton, f.o.b., works.

BLEACHING POWDER—Prices on bleaching powder are firm with shipments reported in good volume for the week. Bleaching powder is currently quoted at $2 per 100 pounds, in drums, at works.

CASEIN—Quotations on casein are reported firm. Demand moderate for the week. Standard domestic casein, 20-30 mesh, is currently quoted at 12 cents per pound; 80-100 mesh, at 12½ cents per pound; all prices in bags, car lots. Standard Argentina casein is currently offered at 12 cents per pound. No quotations on French casein.

CAUSTIC SODA—Prices on caustic soda are unchanged. Demand reported good for the week. Solid caustic soda is currently quoted at $2.30 per 100 pounds; flake and ground at $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Quotations on china clay are firm and continue unchanged this week. Domestic filler clay is currently quoted at from $7.50 to $15 per ton; coating clay at from $12 to $22 per ton, at mines. Imported clay is quoted at from $13 to $25 per long ton, ship side.

CHLORINE—The demand for chlorine is reported active. Prices are firm and the market strong for the current week. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The rosin market is reported as firmer with prices higher for the week, "G" gum rosin is currently quoted at $1.81 per 100 pounds, in barrels, Savannah. "FF" wood rosin is currently quoted at $1.81 per 100 pounds, in barrels, New York. Seventy per cent gum rosin size is quoted at $2.51 per 100 pounds, f.o.b., works.

SALT CAKE—Prices on salt cake are firm under a good demand with current quotations continuing nominal. Domestic salt cake is currently quoted at $17 per ton in bulk; chrome salt cake at $16 per ton. All prices in car lots, f.o.b., shipping point. The quotation of $16.50 per ton on imported salt cake continues nominal.

SODA ASH—Quotations on soda ash are firm and continue to conform to prevailing market quotations. Demand reported good. Quotations on soda ash in car lots, per 100 pounds, are as follows: in bulk, $.90; in paper bags, $1.05; and in barrels, $1.35.

STARCH—Prices on corn starch are firm and continue unchanged for the current week. Pearl is currently quoted at $2.90 per 100 pounds; powdered starch at $3 per 100 pounds; all prices in bags, car lots, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina are firm. Shipments reported in good volume for the week. The commercial grades are currently quoted at $1.15 per 100 pounds; iron free at $1.60 per 100 pounds. in bags, car lots, f.o.b., works.

SULPHUR—Prices on sulphur are firm and continue to conform to prevailing market quotations. Annual contracts are currently quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are quoted at $19 per ton.

TALC—Quotations on talc are firm and continue unchanged at prevailing market prices. Domestic talc is currently quoted at from $15 to $21 per ton, at mills. No quotations on imported talc.

# MARKET QUOTATIONS

## Paper

**(Delivered New York)**

| | | | |
|---|---|---|---|
| News, per ton— | | | |
| Roll, contract | $50.00 | @ | — |
| Sheets | 58.00 | " | — |
| Kraft—per cwt.—Delivered Zone A | | | |
| Northern, Extra Quality | $5.25 | @ | $5.75 |
| Superstandard | 4.87½ | " | 5.25 |
| Northern Standard Wrapping | 4.37½ | " | 4.62½ |
| Standard Wrapping | 4.25 | " | — |
| Tissues—Per Ream—Carlots | | | |
| White No. 1 | .97½ | " | — |
| White No. 1 M. G. | .95 | " | — |
| White No. 1½ | .80 | " | — |
| White No. 2 | .75 | " | — |
| Anti-Tarnish M. G. | .80 | " | — |
| Colored | .85 | " | — |
| Kraft | .87½ | " | — |
| Manila | .77½ | " | — |
| Unbl. Toilet, 1 M. | 3.75 | " | — |
| Bleached Toilet | 5.26 | " | — |
| Paper Towels, Per Case— | | | |
| Unbleached, Jr. | 2.10 | " | — |
| Bleached, Jr. | 3.60 | " | — |
| Manila—per cwt.—C. l. f. a. | | | |
| No. 1 Jute | 8.25 | @ | 10.25 |
| No. 1 Manila Wrapping, 35 lb. | 5.25 | " | — |
| No. 2 Manila Wrapping, 35 lb. | 5.00 | " | — |
| Boards, per ton— | | | |
| News | 42.50 | @ | — |
| Chip | 40.00 | " | — |
| Sgl. Mla. Ll. Chip | 55.00 | " | — |
| White Pat. Coated | 70.00 | " | — |
| Kraft Liners | 55.00 | " | — |
| Binders Boards | 73.00 | " | 80.00 |

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

| | Bonds | | Ledgers | |
|---|---|---|---|---|
| 100% Rag Ext. No. 1 | $39.10 @ | $46.00 | $40.25 @ | $47.25 |
| 100% Rag | 31.05 " | 36.50 | 32.20 " | 37.75 |
| 85% Rag | .... " | .... | 29.90 " | 35.00 |
| 75% Rag | 23.60 " | 27.75 | 24.75 " | 29.00 |
| 65% Rag | .... " | .... | 21.65 " | 26.25 |
| 50% Rag | 17.55 " | 21.50 | 18.70 " | 22.75 |
| 25% Rag | 14.65 " | 17.75 | 15.80 " | 19.25 |

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items. Delivered in Zone 1:

| | Bonds | | Ledgers | |
|---|---|---|---|---|
| No. 1 | $9.35 @ | $11.50 | $11.55 @ | $12.75 |
| No. 2 | 8.50 " | 10.25 | 9.65 " | 11.75 |
| No. 3 | 8.05 " | 9.25 | 9.20 " | 11.25 |
| No. 4 | 7.70 " | 9.50 | 8.90 " | 10.75 |

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper.

Delivered in Zone 1:

| | | | |
|---|---|---|---|
| No. 1 Glossy Coated | $11.90 @ | | $13.50 |
| No. 2 Glossy Coated | 10.35 " | | 11.75 |
| No. 3 Glossy Coated | 9.55 " | | 11.00 |
| No. 4 Glossy Coated | 9.15 " | | 10.50 |
| No. 1 Antique (watermarked) | 9.05 " | | 10.50 |
| No. 2 Offset | 8.40 " | | 9.75 |
| A Grade E. F. | 8.20 " | | 9.50 |
| A Grade S. & S. C. | 8.45 " | | 9.75 |
| B Grade E. F. | 7.65 " | | 8.75 |
| B Grade S. & S. C. | 7.90 " | | 9.00 |
| C Grade E. F. | 7.35 " | | 8.50 |
| C Grade S. & S. C. | 7.60 " | | 8.75 |
| D Grade E. F. | 7.10 " | | 8.25 |
| D Grade S. & S. C. | 7.35 " | | 8.50 |

Ivory & India at $.50 cwt. extra.

## Mechanical Pulp

**(On Dock, Atlantic Ports)**

| | |
|---|---|
| No. 1 Imported— | |
| Moist | No prices |
| Dry | No prices |

**(Delivered)**

| | | |
|---|---|---|
| No. 1 Domestic and Canadian | 40.00 | @42.00 |

## Chemical Pulp

**(On Dock, Atlantic, Gulf and West Coast Ports)**

| | | | |
|---|---|---|---|
| Bleached Sulphite (Domestic and Foreign)— | | | |
| Prime Bleached Sulphite | 3.72½ | @ | 3.87½ |
| Prime Qualities— | | | |
| Easy-Bleaching Sulphite | 3.17½ | " | 3.75 |
| Strong Unbleached Sulphite | 3.17½ | " | 3.75 |
| News Grade, delivered | | | |
| Unbleached Sulphite | 58.00 | " | 63.75 |

**(On Dock, Atlantic Ports)**

| | | | |
|---|---|---|---|
| Kraft Bleached | 4.12½ | " | — |
| Kraft Light & Strong | 3.50 | " | 3.90 |
| Kraft No. 1 | 3.40 | " | 3.80 |

**(F. o. b. Pulp Mill)**

| | | | |
|---|---|---|---|
| Kraft Domestic and Canadian | 2.75 | " | 3.37½ |

**(Delivered)**

| | | | |
|---|---|---|---|
| Soda Bleached | 3.30 | " | — |

Add 60 cents per short ton, dock charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

## Domestic Rags

**New Rags**

(Prices to Mill f. o. b. N. Y.)

| | | | |
|---|---|---|---|
| Shirt Cuttings— | | | |
| New White, No. 1. | 6.12½ | @ | 6.37½ |
| Silesias No. 1 | 4.50 | " | 4.65 |
| New Unbleached | 6.12½ | " | 6.37½ |
| Blue Overall | 4.15 | " | 4.50 |
| Fancy | 3.25 | " | 3.50 |
| Washables | 2.00 | " | 2.15 |
| Mixed Khaki Cuttings | 2.75 | " | 3.00 |
| O. D. Khaki Cuttings | 3.00 | " | 3.15 |

**Old Rags**

| | | | |
|---|---|---|---|
| White, No. 1— | | | |
| Repacked | 3.50 | " | 3.65 |
| Miscellaneous | 2.75 | " | 3.00 |
| White, No. 2— | | | |
| Repacked | 2.50 | " | 2.75 |
| Miscellaneous | 2.00 | " | 2.25 |
| Thirds and Blues— | | | |
| Repacked | 1.50 | " | 1.65 |
| Miscellaneous | 1.10 | " | 1.25 |
| Roofing Rags— | | | |
| No. 1 | 1.15 | " | 1.20 |
| No. 2 | 1.00 | " | 1.05 |
| No. 3 (bagging) | .90 | " | 1.00 |
| No. 4 | .60 | " | .65 |
| No. 5A | .60 | " | .65 |

## Foreign Rags

All prices nominal.

**New Rags**

| | | | |
|---|---|---|---|
| New Dark Cuttings | 2.25 | @ | 2.40 |
| New Mixed Cuttings | 2.00 | " | 2.20 |
| New Light Silesias | 5.50 | " | 5.75 |
| Light Flannelettes | 5.50 | " | 5.75 |
| New White Cuttings | 7.00 | " | 7.50 |
| New Light Oxfords | 4.00 | " | 4.50 |
| New Light Prints | 3.00 | " | 3.25 |

**Old Rags**

| | | | |
|---|---|---|---|
| No. 1 White Linens | 7.50 | " | 8.50 |
| No. 2 White Linens | 6.50 | " | 7.50 |
| No. 3 White Linens | 4.50 | " | — |

# PRICE & PIERCE, LTD

Wood Pulp & Paper Agents

60 East 42nd Street New York City

# West Virginia Pulp and Paper Company

230 Park Ave. New York
35 East Wacker Drive Chicago
Public Ledger Building Philadelphia, Pa.
503 Market St. San Francisco, Cal.

Manufacturers of
ENGLISH FINISH SUPERCALENDERED
MACHINE FINISHED BOOK
and LITHOGRAPHIC PAPERS

Offset, Envelope, Bond, Writing, Mimeograph, Ledger, Eggshell, Cover and Music Papers, Index Bristol, Post Card and Label Papers

HIGH GRADE COATED BOOK

• • • •

KRAFT WRAPPING AND KRAFT ENVELOPE
KRAFT LINER BOARD
BLEACHED SULPHITE AND SODA PULP
BLEACHED AND UNBLEACHED KRAFT PULP

MILLS:
Mechanicville, New York
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Cass, West Virginia
Charleston, South Carolina

# ....for 15 years

## this expert has spliced ORR FELTS

Only a veteran craftsman can splice a felt so the joint is as perfect and strong as the body of the felt itself. It's a difficult technique requiring long time experience.

Average experience for Orr Felt splicers is twenty years—and the perfect work that is done in this department reflects the wisdom of employing skilled workers. It is close attention, not only to splicing, but to all details of manufacture, that makes Orr Felts the finest that mills can buy.

Try Orr Felts and compare them with the ones you are now using. Scores of mills have done this and found that Orr Felts deliver the sheet to the dryers with a lower moisture content.

Orr Felt & Blanket Co.
PIQUA, OHIO

| | | | |
|---|---|---|---|
| No. 4 White Linens. | 2.25 | @ | 3.25 |
| No. 1 White Cotton. | 4.25 | " | 4.75 |
| No. 2 White Cotton. | 3.25 | " | 3.75 |
| No. 3 White Cotton. | 2.50 | " | 3.00 |
| No. 4 White Cotton. | 1.90 | " | 2.20 |
| Extra Light Prints.. | 2.00 | " | 2.40 |
| Ord. Light Prints... | 1.75 | " | 2.15 |
| Med. Light Prints... | 1.55 | " | 1.95 |
| Dutch Blue Cottons. | 2.25 | " | 2.50 |
| French Blue Linens. | 3.00 | " | — |
| Checks and Blues... | 2.00 | " | — |
| Linsey Garments.... | 1.90 | " | 2.00 |
| Dark Cottons..... | 1.50 | " | 1.60 |
| Old Shopperies..... | 1.30 | " | 1.45 |
| New Shopperies..... | 1.45 | " | 1.50 |
| French Blues ..... | 2.25 | " | 2.50 |

### Old Rope and Bagging

(Prices to Mill, f. o. b. N. Y.)

| | | | |
|---|---|---|---|
| Gunny No. 1— | | | |
| Foreign ..... | Nominal | | |
| Domestic ..... | 2.50 | @ | 2.75 |
| Wool Tares, light.... | 2.00 | " | 2.25 |
| Wool Tares, heavy.. | 2.12½ | " | 2.25 |
| Bright Bagging ..... | 2.25 | " | 2.50 |
| Manila Rope— | | | |
| Foreign ..... | 5.25 | " | 5.50 |
| Domestic ..... | 5.25 | " | 5.50 |
| Jute Threads..... | 2.75 | " | 3.00 |
| Sisal Strings ..... | 2.10 | " | 2.35 |
| Mixed Strings..... | 1.10 | " | 1.20 |

### Old Waste Papers

(F. o. b. New York)

| | | | |
|---|---|---|---|
| Shavings— | | | |
| White Envelope Cuttings ..... | 3.10 | @ | 3.25 |
| Ordinary Hard White No. 1.... | 2.25 | " | 2.50 |
| Soft White No. 1.. | 1.80 | " | 1.90 |
| Soft White Extra.. | 2.50 | " | 2.60 |
| Flat Stock— | | | |
| Stitchless ..... | 1.10 | " | 1.25 |
| Overissue Mag..... | .90 | " | 1.00 |
| Solid Flat Book... | .80 | " | .85 |
| Crumbled No. 1... | .70 | " | .75 |
| Ledger White Stock. | 1.60 | " | 1.70 |
| Ledger Stock Colored | 1.20 | " | 1.30 |
| Manila— | | | |
| New Env. Cut.... | 1.70 | " | 1.80 |
| New Cuttings..... | 1.30 | " | 1.40 |
| Old Kraft Machine Compressed bales.. | 1.40 | " | 1.50 |
| News— | | | |
| No. 1 White News | 1.75 | " | 1.90 |
| Strictly Overissue . | .96 | " | 1.00 |
| Strictly Folded.... | .70 | " | .75 |
| Corrugated ..... | .62½ | " | .67½ |
| No. 1 Mixed Paper.. | .47½ | " | .52½ |

### Twines

(F. o. b. Mill)

(Soft Fiber)

| | | | |
|---|---|---|---|
| Coarse Polished— | | | |
| India ..... | .19 | @ | — |
| White Hemp ..... | .19 | " | — |
| Fine Polished— | | | |
| Fine India..... | .22½ | " | — |
| Unpolished— | | | |
| Box ..... | .15½ | " | — |
| Paper Makers..... | .15 | " | — |
| Tube Rope..... | .16 | " | — |
| Wall Paper..... | .18½ | " | — |
| Wrapping ..... | .18½ | " | — |
| Soft Fiber Rope... | .16¾ | " | — |
| Cotton ..... | .24 | " | — |

(Hard Fiber)

| | | | |
|---|---|---|---|
| Medium Java..... | .11 | " | — |
| Mex. Sisal..... | .10½ | " | — |
| Manila ..... | .24 | " | — |

## PHILADELPHIA

### Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

| | | | |
|---|---|---|---|
| Shirt Cuttings— | | | |
| New White No. 1. | .06¾ | @ | .07 |
| New White No. 2. | .03½ | " | .04 |
| Light Silesias..... | — | " | .04½ |
| Silesias, No. 1..... | — | " | .04 |
| Black Silesias, soft | — | " | .03 |
| New Unbleached.. | .06 | " | .06¼ |
| Washable Prints.. | .02½ | " | .03 |
| Washable No. 1.. | — | " | .01½ |
| Blue Overall..... | .04 | " | .04½ |
| Cottons—According to grades— | | | |
| Washable shredding | — | " | .01½ |
| Fancy Percales.... | .03 | " | .03¼ |
| New Black Soft... | .02½ | " | .02¾ |
| New Light Seconds | — | " | .04 |
| New Dark Seconds | — | " | 1.50 |
| Khaki Cuttings— | | | |
| No. 1 O. D..... | .03 | " | .03¼ |
| No. 2 Mixed..... | .01¾ | " | .02 |
| Corduroy ..... | .01¾ | " | .01½ |
| New Canvas..... | .04½ | " | .05 |
| New Black Mixed. | — | " | .02¾ |

### Domestic Rags (Old)

| | | | |
|---|---|---|---|
| White No. 1— | | | |
| Repacked ..... | 3.00 | @ | 3.50 |
| Miscellaneous .... | 2.75 | " | 3.00 |
| Thirds and Blues— | | | |
| Miscellaneous .... | 1.35 | " | 1.50 |
| Repacked ..... | 1.55 | " | 1.65 |
| Black Stockings (Export) ..... | 3.50 | " | 4.00 |
| Roofing Stock— | | | |
| Foreign No. 1.... | Nominal | | |
| Domestic No. 1... | 1.30 | " | 1.35 |
| Domestic No. 2... | 1.10 | " | 1.15 |
| Roofing Bagging.. | 1.00 | " | 1.05 |

### Bagging

(F. o. b. Phila.)

| | | | |
|---|---|---|---|
| Gunny, No. 1— | | | |
| Foreign ..... | Nominal | | |
| Domestic ..... | 2.50 | @ | 2.75 |
| Manila Rope..... | — | " | 5.50 |
| Sisal Rope..... | 2.00 | " | 2.25 |
| Mixed Rope..... | .75 | " | 1.00 |
| Scrap— | | | |
| No. 1..... | 2.55 | " | 2.75 |
| No. 2..... | — | " | 1.50 |
| Wool Tares, heavy.. | 3.75 | " | 4.00 |
| No. 1 New Light Burlap ..... | 3.00 | " | 4.00 |
| New Burlap Cuttings | 2.50 | " | 3.00 |

### Old Papers

(F. o. b. Phila.)

| | | | |
|---|---|---|---|
| Shavings— | | | |
| No. 1 Special Hard White ..... | 2.45 | @ | 2.70 |
| No. 2 Hard White | 2.20 | " | 2.35 |
| No. 1 Soft White.. | 1.90 | " | 2.00 |
| No. 2 ordinary White ..... | 1.70 | " | 1.85 |
| No. 1 Mixed..... | .90 | " | 1.00 |
| Solid Ledger Stock.. | 1.90 | " | 2.00 |
| Ledger Stock, white. | 1.50 | " | 1.60 |
| Ledger Stock, colored | 1.20 | " | 1.25 |
| No. 1 Books, heavy.. | .85 | " | .90 |
| Manila Cuttings..... | 1.75 | " | 1.80 |
| Print Manila..... | .60 | " | .65 |
| Container Manila.... | .50 | " | .55 |
| Kraft Paper ..... | 1.40 | " | 1.45 |
| No. 1 Mixed Paper.. | .45 | " | .50 |
| Straw Board Chip... | .45 | " | .50 |
| Binders Board Chip.. | .35 | " | .40 |
| Corrugated Board... | .60 | " | .65 |
| Overissue News..... | .70 | " | .75 |
| Old Newspapers..... | .60 | " | .65 |

## BOSTON

### Old Papers

(F. o. b. Boston)

| | | | |
|---|---|---|---|
| Shavings— | | | |
| No. 1 Hard White | 2.90 | @ | 3.00 |
| No. 1 Soft White | 2.50 | " | 2.75 |
| No. 2 Mixed..... | .90 | " | 1.00 |
| Solid Ledger Books.. | 2.00 | " | 2.10 |
| Overissue Ledger Stock ..... | 1.75 | " | 2.00 |
| White Ledger Stocks | 1.50 | " | 1.65 |
| Mixed Ledgers ..... | 1.25 | " | — |
| No. 1 Heavy Books | 1.10 | " | 1.20 |
| No. 1 Books, Light.. | .75 | " | .85 |
| Crumpled Stitchless Book Stock..... | 1.15 | " | 1.20 |
| Manila Env. Cuttings | 2.60 | " | 2.65 |
| Manila Envelope Cuttings, extra quality | 2.35 | " | 2.60 |
| White Blank News.. | 1.70 | " | 1.80 |
| No. 1 Kraft..... | 1.25 | " | 1.40 |
| Extra No. 1 Kraft.. | 1.75 | " | — |
| Mixed Papers ..... | .45 | " | .47½ |
| Print Manila ..... | .60 | " | .65 |
| Container Manila.... | .60 | " | .70 |
| Old Newspapers..... | .50 | " | .55 |
| Paper Wool Strings. | .95 | " | 1.10 |
| Overissue News..... | .65 | " | .70 |
| Box Board Chips.... | .35 | " | — |
| Corrugated boxes.... | .55 | " | .60 |
| Kraft corrugated boxes | .95 | " | 1.05 |
| New Kraft Corrugated Cuttings ..... | 1.75 | " | — |
| Screening Wrappers. | .70 | " | .80 |

### Bagging

(F. o. b. Boston)

| | | | |
|---|---|---|---|
| Gunny Bagging— | | | |
| Foreign ..... | (nominal) | | |
| Domestic ..... | 2.90 | @ | 3.25 |
| Sisal Rope..... | 2.60 | " | — |
| Mixed Rope ..... | .85 | " | 1.00 |
| Transmission Rope— | | | |
| Foreign ..... | 2.50 | " | 2.75 |
| Domestic ..... | 2.75 | " | 2.90 |
| Soft Jute Rope..... | 3.50 | " | 3.75 |
| Manila Rope— | | | |
| Foreign ..... | 5.25 | " | 5.35 |
| Domestic ..... | 5.50 | " | 5.75 |
| Jute Carpet Threads. | 2.00 | " | 2.25 |
| Bleachery Burlap.... | 4.00 | " | 4.50 |
| Scrap Burlap— | | | |
| Foreign ..... | (nominal) | | |
| Domestic ..... | 2.85 | " | 3.10 |
| Scrap Sisal..... | 2.50 | " | 2.60 |
| Scrap Sisal for Shredding ..... | 2.50 | " | 2.60 |
| Wool Tares— | | | |
| Foreign ..... | (nominal) | | |
| Domestic ..... | 2.85 | " | 3.00 |
| Aust. Wool Pouches. | 2.75 | " | 3.00 |
| New Burlap Cuttings | 3.75 | " | 4.00 |
| Heavy baling bagging | 2.75 | " | 3.00 |
| Paper Mill Bagging.. | 1.75 | " | 2.00 |
| No. 2 Bagging..... | .75 | " | .80 |

### Domestic Rags (New)

(F. o. b. Boston)

| | | | |
|---|---|---|---|
| Shirt Cuttings— | | | |
| New Light Prints. | — | @ | .03 |
| Fancy Percales.... | .04 | " | .04¼ |
| New White No. 1. | .06¾ | " | .07 |
| New Light Flannelettes ..... | .05 | " | .05¼ |
| Canton Flannel, Bleached ..... | .0625 | " | .0650 |
| Underwear Cutters, Bleached ..... | .06 | " | .0625 |
| Silesias No. 1..... | .05 | " | — |
| New Black Silesias.. | 3.00 | " | 3.25 |
| Red Cotton Cuttings | .04 | " | .05 |
| Soft Unbleached.... | .06 | " | .06¼ |
| Blue Cheviots..... | .04¾ | " | .04½ |
| Fancy ..... | .02 | " | .02½ |
| Washable ..... | .02 | " | .02½ |
| Cottons—According to Grades— | | | |
| Blue Overalls..... | .04¾ | " | .04¾ |
| New Black, Soft.. | .03 | @ | .03¼ |
| Khaki Cuttings..... | .02¼ | " | .03 |
| O. D. Khaki..... | .02½ | " | .03¼ |
| Corduroy ..... | .06¾ | " | .07 |
| New Canvas..... | .06¾ | " | .07 |
| B. V. D. Cuttings... | .06½ | " | .06¾ |

### Domestic Rags (Old)

(F. o. b. Boston)

| | | | |
|---|---|---|---|
| White No. 1— | | | |
| Repacked ..... | 2.75 | @ | 3.75 |
| Miscellaneous .... | 2.40 | " | 2.60 |
| White No. 2— | | | |
| Repacked ..... | 1.90 | " | 2.00 |
| Miscellaneous .... | 2.00 | " | 2.25 |
| Twos and Blues..... | 2.00 | " | 2.25 |
| Old Blue Overalls... | 1.60 | " | 2.00 |
| Thirds and Blues.... | 1.50 | " | 1.75 |
| Miscellaneous ..... | 1.25 | " | 1.35 |
| Black Stockings..... | 3.50 | " | 4.00 |
| Roofing Stock— | | | |
| No. 1..... | 1.20 | " | 1.25 |
| No. 2..... | .95 | " | 1.00 |
| No. 3..... | .85 | " | .95 |

### Foreign Rags

(F. o. b. Boston)

| | | | |
|---|---|---|---|
| Canvas ..... | .04¼ | @ | — |
| Dark Cottons..... | (nominal) | | |
| Dutch Blues..... | (nominal) | | |
| New Checks and Blues | (nominal) | | |
| Old Fustians..... | (nominal) | | |
| Old Linsey Garments. | (nominal) | | |
| New Silesias..... | (nominal) | | |

## CHICAGO

### Waste Paper

(F. o. b. Chicago)

| | | | |
|---|---|---|---|
| Shavings— | | | |
| No. 1 White Envelope Cuttings.... | 3.15 | @ | — |
| No. 1 Hard White | 2.50 | " | 2.65 |
| No. 1 Soft White. | 2.00 | " | 2.20 |
| Ledger and Writings | .85 | " | .95 |
| Solid Books..... | .95 | " | 1.10 |
| Blanks ..... | 1.50 | " | 1.60 |
| Krafts ..... | 1.40 | @ | 1.50 |
| New Kraft Cuts.... | 1.60 | " | 1.75 |
| Overissue News..... | 1.00 | " | 1.10 |
| Old Newspapers— | | | |
| No. 1 Folded News | .70 | " | .80 |
| No. 1 Mixed Paper | .40 | " | .50 |
| Roofing Stocks— | | | |
| No. 1..... | .95 | " | 1.00 |
| No. 2..... | .85 | " | .90 |

## Explains Allis-Chalmers Strike

In a letter sent to stockholders March 20, the president of the Allis-Chalmers Manufacturing Company said in part:

"The strike, called by local C.I.O. union leaders on January 22, has resulted not only in economic loss to our workers and stockholders, but the Government has lost scheduled delivery of $45,000,000 worth of equipment vital to national defense."

"These losses are particularly unfortunate because they are unnecessary losses. There is nothing in this strike which could not have been negotiated while all our employes continued their work."

"Settlement of this strike has been made unusually difficult because the Union apparently is handling it as a 'test case' to use the national defense emergency to gain a purely union organizational advantage, which it calls 'union security'."

"Simply stated, the Union seeks a contract which would require us to discharge employes merely because they are not members of the Union in good standing."

"President Roosevelt, within the last two weeks, has voiced his opposition to union jurisdiction disputes in defense industries, and has indicated that he is working on a solution to the problem."

"If our national defense program is not to be seriously handicapped, the Government must develop —either through legislation or by executive order— a well defined policy that will safeguard the rights of both labor and industry, and at the same time protect the public interest by not permitting strikes in defense industries for the purpose of gaining union organizational advantages at the expense of the defense program."